



FRIDAY, NOVEMBER 30.

Contributions.

Performance of an English Express Locomotive.—Correction.

TO THE EDITOR OF THE RAILROAD GAZETTE:

In your issue of Oct. 26, which has just reached me, I find I have made a slight error in the contribution which I sent you concerning the English express engine which is running regularly 10,000 miles per month. The engine is worked by two crews of men, and not by one only as I stated before. I may further mention that the engine is running now with even less trouble than it did last year, and is burning only 26.5 lbs. of coal per mile. Although it is also most economical in the use of oil and tallow, the wrought-iron piston rings, which were recently taken out after running 33,000 miles, were scarcely worn.

E. W.

Frog and Switch Rules for the 5 ft. 6 in. Gauge.

TO THE EDITOR OF THE RAILROAD GAZETTE:

Replying to "Inquirer" in THE GAZETTE of Oct. 19th, 1888, I give the following for the case stated. 1. "For lines 20 feet apart, curve reversing midway between, gauge 5 ft. 6 in., crossing 1 in 10." I assume that he means that the width of 20 ft. is between tracks and not between centres. Call this w and the gauge g , and this sum the distance between centres $s = g + w$ (see fig. 1). The frog number is $n = 10$. The distance from point of curvature to the reversing point, measured parallel to straight track, is D . The formula then for the latter is:

$$D = \sqrt{\frac{2gn^2s - g^2}{4}}$$

and the numerical value is

$$D = \sqrt{\frac{11 \times 100 \times 25.5^2 - 4}{4}} = 167 \text{ ft.}$$

This distance measured from the p. c. on straight track will give a point at right angles from the reversing point of centre line.

2. "Gauge 5 ft. 6 in., width between tracks 6 ft., crossing 1 in 10. What is the distance from nose to nose of crossing?" This I understand to mean the distance between the frog points in the two tracks. The distance between one of these and a point on the same rail opposite the other and at right angles thereto is thus formed. The frog distance, that is the distance of the frog from the point of curvature or heel of switch in the same straight rail in which the frog lies, is $2gn$, that is, twice the gauge g by the frog number, which in the case given is $11 \times 10 = 110$ ft. The curves being supposed to reverse midway as in the former case, the reversing point is found by the formula above given, and is

$$D = \sqrt{\frac{11 \times 100 \times 11.5^2 - 4}{4}} = 111.88.$$

The difference between these results is 1.88 ft., and twice this, or 3.76, is the distance y from one frog point measured on the straight rail in which it lies to a point in that rail opposite to and at right angles from the other frog. The square of this plus the square of the width between tracks is equal to the square of the direct distance between frog points, or $\sqrt{3.76^2 + 6^2} = \sqrt{14.1376 + 36} = 7.08$ ft., or 7 ft. 1 in., nearly.

If a tangent from the frog is interposed, as is frequently done (see fig. 2), the distance y' between frogs, measured parallel to straight rail, is found by the following formula:

$$y' = \frac{n^2 - 4}{n} - 2gn$$

This reduced to its numerical value is

$$y' = \frac{99.75}{10} - 11 \times 10 = 4.71.$$

This distance plus twice the frog distance (or $4gn = 220$ ft. gives 224.71 ft. as the distance between the points of curvature of the two curves measured parallel to straight track. The distance as found above, without the tangent, is $111.88 \times 2 = 223.76$.

I hope soon to have the demonstrations of these and other turnout formulae in form for publication.

J. A. ANDERSON.

LAMBERTVILLE, N. J., Nov. 1, 1888.

Meeting of the Master Car-Builders' Club of New York.

A meeting of this Club was held at the rooms, No. 113 Liberty street, on Thursday evening, Nov. 15.

Mr. COCK, who represents the firm of Rieble Brothers, read a paper on testing machines. Mr. Cock said that the first machine built by his firm was made for the contractors who furnished cast-iron water pipe for the Nassau Water Department, Brooklyn, L. I. The Department required that the iron furnished for the pipe should stand a tensile strain of 16,000 lbs. per square inch. This machine was a crude affair, but contained the fundamental principles embodied in one of the styles of machine made by the firm at the present time. In 1872 Mr. Francis Stevens, then Superintendent of the Camden & Amboy Railroad shops at Hoboken, N. J., ordered a machine for the purpose of testing the iron of the boiler of the steamboat "Westfield," which exploded. From this time the testing machine business took a start. The United States Government, profiting by the experience

of Mr. Stevens, adopted the present method of testing iron by the steamboat inspectors, and purchased eight or ten machines, which are now in use in the different districts. Mr. Cock cited a number of instances showing the ignorance of a certain class of practical men regarding the uses of a testing machine.

Among manufacturers of articles made of cast iron the use of testing machines is gradually gaining ground. The Holyoke Machine Co. has one of these machines in use, and the writer of the paper was informed that since last summer this company had commenced a systematic test of its mixtures of iron, and that now it is a very rare thing to lose gear-wheels from breakage, the company being a large manufacturer of those articles for turbine water-wheels. It is not regarded as safe now to make castings of wheels without previously testing the mixture of metals. From experiments which he had made he was astonished to find how much difference there was between the strength of cast iron which had been carefully mixed and that used in ordinary foundries where no tests were made. In many wheel foundries testing machines are used, but in many they are not. The managers of such foundries all make daily tests of the chill of their wheels, and it is surprising that they do not also make tests of their strength. Railroad companies, he thought, should be as careful to have the iron used in the manufacture of wheels tested as engineers are in having the iron for bridges tested. He also thought that iron used for brake-rods, brake-chains, etc., should be inspected and the quality known by testing it in the machine. The machines are also used by many engineers and manufacturers to test the quality of hydraulic cement. Much opposition to the use of such machines was shown by the manufacturers. But as present regular tests are made of the cement used by many manufacturers. The New York Department of Public Works at the aqueduct station in Yonkers in one year tested over 3,000 specimens of cement in one machine. General Stone is using Rosendale cement in the concrete for the foundation of the pedestal for the statue of Liberty at Bedloe's Island, and tests 100 specimens of cement every day. The United States Navy Yard used one of these machines for the cement used in the construction of the sewer in the yard, and found it of great value.

The PRESIDENT said that the subject of testing materials was not new. The question is, whether it is practiced as much as it ought to be. At a meeting held in Buffalo last winter, the subject of the quality of iron used in cast-iron chilled wheels was discussed, and reference was made to some tests by which they could know the quality of the metal that was used for some standard. Many of the wheel makers present rather hooted at the idea of any one knowing more than they did about their mixtures. But he noticed that since that time some of them have made some tests, and through these tests have improved the quality of the metals they use, simply by manipulating the mixture; so that testing is simply knowing the quality of the material which is used.

Mr. WILDER asked whether the tests which were made were simply tests of tensile strength. He thought that that was insufficient to determine the quality of iron, as some iron which would stand a very high tensile strain would be almost useless in car work. He said that he had the subject of testing iron now under consideration and was submitting samples of material to the drop test.

Mr. COCK remarked that he thought that a tension test was very much better than a torsion test.

Mr. WILDER replied that the question was whether a tensile test was always a sure proof that the materials were of the best quality. Iron might stand high tensile strain and yet be very brittle and therefore would not stand shock.

Mr. CHANDLER said that he had been called upon some time ago to supply a machine for testing axles. He exhibited a drawing of such a machine which he had designed. An axle was placed in this machine so as to have the same points of bearing and the same points loaded as in practice. A concussion would be applied to the axle of such force as future experiments should determine to be required. He then explained the construction of the machine from drawings which he exhibited.

The PRESIDENT called attention to the desirability of knowing the quality of axles and of all other materials used in railroad operation. He said that the gentleman who last spoke had come to his office with a letter from a prominent railroad man who was quite earnest in this matter of car axles, having had an unusual number of them broken on his line during the previous severe winter. Some of them under their own cars and many of them under cars not owned by the company, some of them showing that they were made of very poor material, including old fish-plates and other kinds of iron that ought not to be put into car axles. If some process could be devised by which if an axle and a pair of wheels was put through a machine of this kind and it could be known whether the wheel were both of the same diameter or placed on the axle the same distance from each end, it would be a material gain to car-builders.

Mr. WILDER said that some years ago he took occasion to examine all invoices of bar iron which were received on their road, and in examining them he cut off a short piece, and polished the end of the bar and etched it with acids, and in nearly all cases he found the small-sized section of a T rail as it was drawn down, showing the rail and iron piled about it had retained the same section as it was rolled down. Within the last two years his company had been buying quite a large number of cars that were built by various makers, and the inspectors had very positive orders to inspect the materials used, and among other things he insisted that a drop test should be employed on all axles received. The result was that in a very short time they had two or three thousand axles which the company refused to receive. One maker claimed that it was not possible to make axles to stand the tests which were insisted upon, but without modifying the tests it came about before they got through that manufacturers were not only able to make axles and were willing to do it to stand the tests insisted upon, but to stand a still more severe one. The test was a blow of a 1,600-lb. weight falling on the centre of the axle resting on supports three feet apart, giving three blows of 10 ft. fall and two blows of 15 ft. fall. They received axles that would stand as many as 12 or 14 blows at 15 ft. Before getting through the summer they seldom broke an axle, while in the beginning they found very few axles that would stand the test. Of course this test destroyed the axle, and in case it stood the test the company had to pay for it.

The PRESIDENT observed that the testing of materials would be beneficial to the manufacturers as well as to the consumer. The use of the drop test always has the effect of improving the quality of the axles received. He thought the time was not far distant when car-builders would be able to tell exactly what the quality of the material was which they were using. The officers of some of our roads are inclined in making tests of this kind to have them done very scientifically. That is, they want them done so truly as to know all the ingredients and proportions of the ingredients contained in the materials. But practically, he thought, we need to get at the quality of the material just as quickly as possible after it reaches the shop. A chemical

analysis of the specimens that are tested can be a future consideration.

Mr. PACKARD, of the Baltimore & Ohio Railroad, said that his company was about to establish a laboratory for testing materials. It was proposed to test materials both chemically and mechanically.

Mr. FORNEY was called on and said that experiments are very much more difficult to make than most people imagine. It is generally supposed that almost any sort of a fellow can make an experiment and that it does not make much difference how the experiment is made. As a matter of fact it takes a very superior kind of man to make an experiment accurately. Take any ordinary incident of life and get three men to describe it, and you will not find two of them agree about the facts. A person who will observe and record all the phenomena in any given case with perfect accuracy is a very rare man indeed. He did not agree with the President that the scientific tests were unnecessary. Superfluous science of course is a humbug; but if any railroad company undertakes to make tests to ascertain facts just that soon those facts will become scientific. Science has been defined as definite knowledge. That is when knowledge becomes accurate and precise, it becomes scientific. Some one else has said that science is simply a very superior quality of common sense. It is very true that under the guise of science, people very often undertake to do things, and to discover qualities and properties of materials which really have no practical bearing on the questions at issue, and if you undertake to test bar iron, unless you do it always under exactly the same conditions, comparison is impossible. If you test the axles of one maker in one way and then test those of another in another way, the comparison will be unfair; the tests must always be made under exactly the same conditions, and if that is done the test will be a scientific one, no matter what sort of a man makes it. What railroad companies should aim at is to insure such testing as will be entirely reliable. If it is not done with care and correct observation the experiment will be misleading. With reference to the necessity of testing materials used on railroads, no one can look into the matter without being satisfied of the great want of knowledge of the quality of such materials used. Take almost anything that we eat or drink or wear, and it is adulterated in some way by some one who wants to sell a cheap thing at a dear price. When we drink wine it is adulterated, and even our whiskey is not pure; so that there is much need for testing, not only on railroads, but elsewhere.

The PRESIDENT replied that if railroad companies should say to manufacturers that they must produce materials composed of ingredients mixed in certain proportions, they would take away the whole responsibility from the manufacturers. His idea was that the railroad companies should specify what qualities materials should have and leave the manufacturer to produce that quality, and that the railroad company should have the means of knowing through tests as scientific and as elaborate as may be necessary to ascertain just what quality the articles have. What is required at the shops is to know as quickly as possible when material is received whether it is of the quality called for. There are some kinds of material for which no other test can be employed except that of chemical analysis.

Mr. FORNEY said that he agreed perfectly with the President that tests should be as simple as possible, and that it is obviously more important to railroad companies to know how strong an axle is or how strong a piece of iron for making links and pins is than to know what its chemical constituents are, but in many cases it is important to a railroad company to know what the chemical composition of materials is. He said that in a railroad shop recently he was shown samples of soap that had been received, and \$5 worth of which it was found would utterly spoil \$25 worth of varnish on the cars. In that case no physical test of the strength of the soap would be of any service. What was required was the chemical test. If a railroad company was buying link-iron, for example, merely to get at the tensile strain that iron would bear, would not determine whether it was suitable for the purpose it was intended for. A brittle iron might stand a high tensile strain and yet would be unsuitable for links, which need to be tough as well. Therefore, in order to determine the quality of material that is needed, railroad companies are compelled to resort to what might be called scientific tests, or, in other words, if any tests are made, if they are done with the required care and accuracy, they will become scientific.

Mr. WILDER said he agreed with Mr. Forney in regard to the necessity of combining chemical tests with the other tests that were used, but thought that the chemical test should always follow the physical test.

The meeting then adjourned.

The Bismarck Bridge on the Northern Pacific Railroad.

We publish this week a perspective view of this great work and maps showing its location across the Missouri River at Bismarck where it connects the Dakota and Missouri divisions of the Northern Pacific Railroad. Most of the following history and description of the work is taken from an account published in a local paper at the time the bridge was opened for traffic.

Although the original scheme of the Northern Pacific Railroad contemplated a bridge across the Missouri River at or near Bismarck, no definite action with reference to the construction of this bridge was taken until the winter of 1880, when Mr. George S. Morison was requested to examine the river at this point in conjunction with Gen. A. Anderson, Engineer-in-Chief, and to prepare a report on the best method of crossing the river.

The first careful examination was begun in April, 1880. The fact that the railroad was already built from the east into the city of Bismarck and westward from Mandan made it important that the crossing of the river should be as nearly as practicable on a direct line between those two points; but the examination was extended down the river to Fort Abraham Lincoln, and about an equal distance up the river. The crossing at Fort Lincoln possessed the great advantage of a river less than 1,000 ft. wide; but as the silt-bearing characteristics of the Missouri favor the contraction of the river to about this width by artificial means, it was decided that if a good bottom could be found near the direct line it would be wiser to incur the additional expense of works to make an artificial contraction than to increase the length of the line several miles, as would be done by crossing at Fort Lincoln.

In July, 1880, the preliminary examinations were completed, and the location of the bridge virtually fixed. The point selected was within two or three hundred feet of the line on which the proposed bridge has now been built, this location being determined as combining to the best advantage directness of route with a favorable bottom. The river at this point was about 2,800 ft. wide, and the channel variable, about two-thirds of the whole width of the river being occupied, except at extreme high water, by sand bars, as

the universal case on the Missouri where the width between high water banks exceeds 1,000 or 1,200 ft.

The report of July, 1880, proposed to cross the river with a bridge consisting of three spans of 400 ft. each, resting on solid piers of granite masonry. A dyke was to be built from the west shore to within 1,000 ft. of the east shore, which is here a high bluff of extremely hard clay, thus confining the river within a width favorable to the maintenance of a fixed channel.

The bridge was to be located about 500 ft. below the dyke, and to provide for contingencies was made 200 ft. longer than the width of the confined river. This plan of operations has now been carried out, and the completed work

terms as wholly changed the financial position of the corporation, and it was determined to proceed at once with the construction of the Bismarck Bridge.

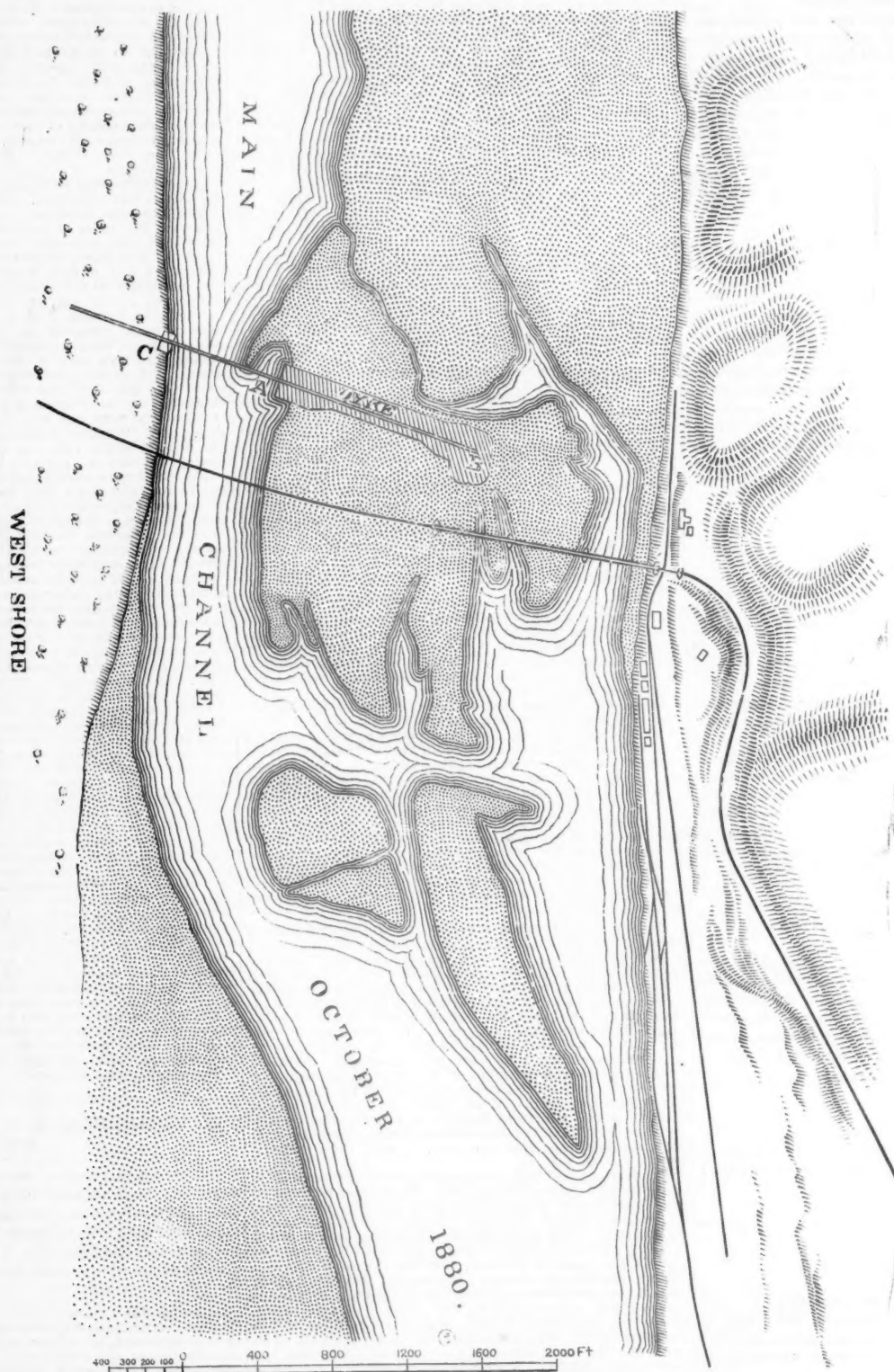
On Dec. 16 a vote was passed by the board of directors by which the immediate construction of the bridge was determined upon, and the work was placed in the hands of the engineer under whose charge it has been completed.

The winter of 1880-81 was one of unusual severity, with long continued cold weather and a heavy snowfall. Fortunately on the line of the Northern Pacific Railroad there was comparatively little wind, and the road was kept open through the cold season.

On Jan. 7, 1881, Mr. H. W. Parkhurst, who had been ap-

CONTRACTS.

On Jan. 28, 1881, a contract was let to the well-known firm of Saulspagh & Co., of Rock Island, Ill., for the construction of the substructure of the bridge, this including the foundation and masonry of the four piers. In April the quarrying of stone was begun near Watab station, in Minnesota, but the quarry not proving a good one, another was subsequently opened near East St. Cloud. This last quarry, now known as the Rock Island quarry, furnished four-fifths of the stone used in the Bismarck Bridge. A sub-contract for the pneumatic work of the two channel piers was made by Messrs. Saulspagh & Co. with Messrs. Rust & Coolidge of Chicago.



MAP OF MISSOURI RIVER CROSSING AT BISMARCK, NORTHERN PACIFIC RAILROAD.

differs in no essential respect from the plans contemplated in the report of July, 1880.

Although the report was received with favor by the board of directors, the finances of the Northern Pacific Railroad Co. were not in such condition as to warrant the immediate construction of the bridge, but it was decided to proceed at once with the building of the dyke. Materials were collected at once for this purpose and the construction of the dyke was begun in the fall of 1880. Unfortunately while waiting for materials the main navigable channel of the river moved over to the west shore (as shown in the map, fig. 2), and when work was actually begun it was found necessary to leave this channel open for navigation. A wired willow mattress was built, however, on the proposed location of the dyke from the east side (A, fig. 3) of the navigable channel to the point (B) fixed for the west boundary of the corrected channel, leaving a space between the mattress and either shore.

Toward the end of 1880 the general mortgage loan of the Northern Pacific Railroad Co. was negotiated on such

pointed by Mr. Morison First Assistant Engineer, arrived at Bismarck and took charge of the work on the river. The state of affairs at this time was very perplexing. The flexible foundation for a dyke had been laid, but the main channel of the river was on the wrong side of the dyke, and the short time remaining before the season when the ice would break up showed that all efforts must be concentrated in putting the work already done in such shape as to prevent its destruction. The next six weeks were spent in this way, a low crib of cottonwood logs being built on the mattress foundation and loaded down with stone and frozen earth.

In March the river rose to a height some feet above the ordinary level of the summer flood, and on the 30th the ice moved out with unusual violence, the river rising 13 ft. above the ordinary summer floods, overflowing the entire bottom land and standing 14 ft. deep in the streets of Mandan, which was supposed to have been located above high water. The ice passed over the dyke, which was left comparatively uninjured, but the channel remained next to the west shore.

On Feb. 2, 1881, a contract was awarded to the Detroit Bridge & Iron Works, of Detroit, Mich., for the manufacture and erection of the superstructure, consisting of three through spans of 400 ft. each, and two deck spans of 113 ft. each, the work to be built in all respects according to the detailed plans and specifications prepared by the engineer of the bridge.

In April the construction was fairly begun, though ground was not actually broken until May.

The construction of the Bismarck Bridge involved three different pieces of work:

First, the control and rectification of the river.

Second, the bridge proper.

Third, the approaches.

The control and rectification of the river consisted in confining it to the 1,000 ft. limit between the east shore and the end of the dyke, and the protection of the east shore with rip-rap so as to render it doubly secure from the eroding action of the water. After the ice went out the main channel was left between the uncompleted dyke and the

west shore, and the action of the current during the spring and summer floods wore away about 200 ft. of this portion of the dyke.

The relative amount of water passing through the east and west channels changed gradually, until by the end of April, 1881, the amount of water passing through the east channel was decidedly more than that through the west channel. In May an attempt was made to close the west channel, and piles were driven for a bridge to connect the west end (A) of the dyke with the west shore (at C, fig. 3); but this work was destroyed by high water before it could be completed, this destruction not being wholly unexpected.

On July 25, 1881, when the summer floods had receded about 6 ft. from the maximum height, the driving of this pile bridge was begun again, and it was completed in August. A track was then laid to the end of the dyke, which has ever since been maintained.

During the spring and summer the east end of the dyke was strengthened by rip-rap, which was boated to it from the east shore. After the track was completed to the end of the dyke, rip-rap was brought there on cars and unloaded directly into position. In this way the end of the dyke was maintained for several months against the strongest current in the river, and with a depth of water of 50 feet immediately outside of it.

The west channel silted up rapidly during the fall months,

Regulations for Grade Crossings in Ohio.

In accordance with a statute passed by the Legislature last year, making provision for the avoidance of the stop now required for all trains or engines passing over the crossing of two railroads that cross each other, or that in any way connect at a common grade, Railroad Commissioner Sabine, of Ohio, has prepared the following regulations which must be complied with before the requirement to stop trains is dispensed with:

On any track on which trains are to approach, and without stopping cross over a second track intersecting the first at grade, it is deemed essential to safety:

That such track be provided with a switch facing outward from the crossing, and which shall be capable of being set and locked by a lock on the switch itself, either to the main line or for derailing any train or locomotive approaching the crossing, and that the switch be set at such a distance that any train derailed by it will not be able to reach the crossing before coming to rest.

Also, that this track be provided with at least two signals, one signification for both of which shall be "danger," or "stop," and the other "safety," or "clear," one of which

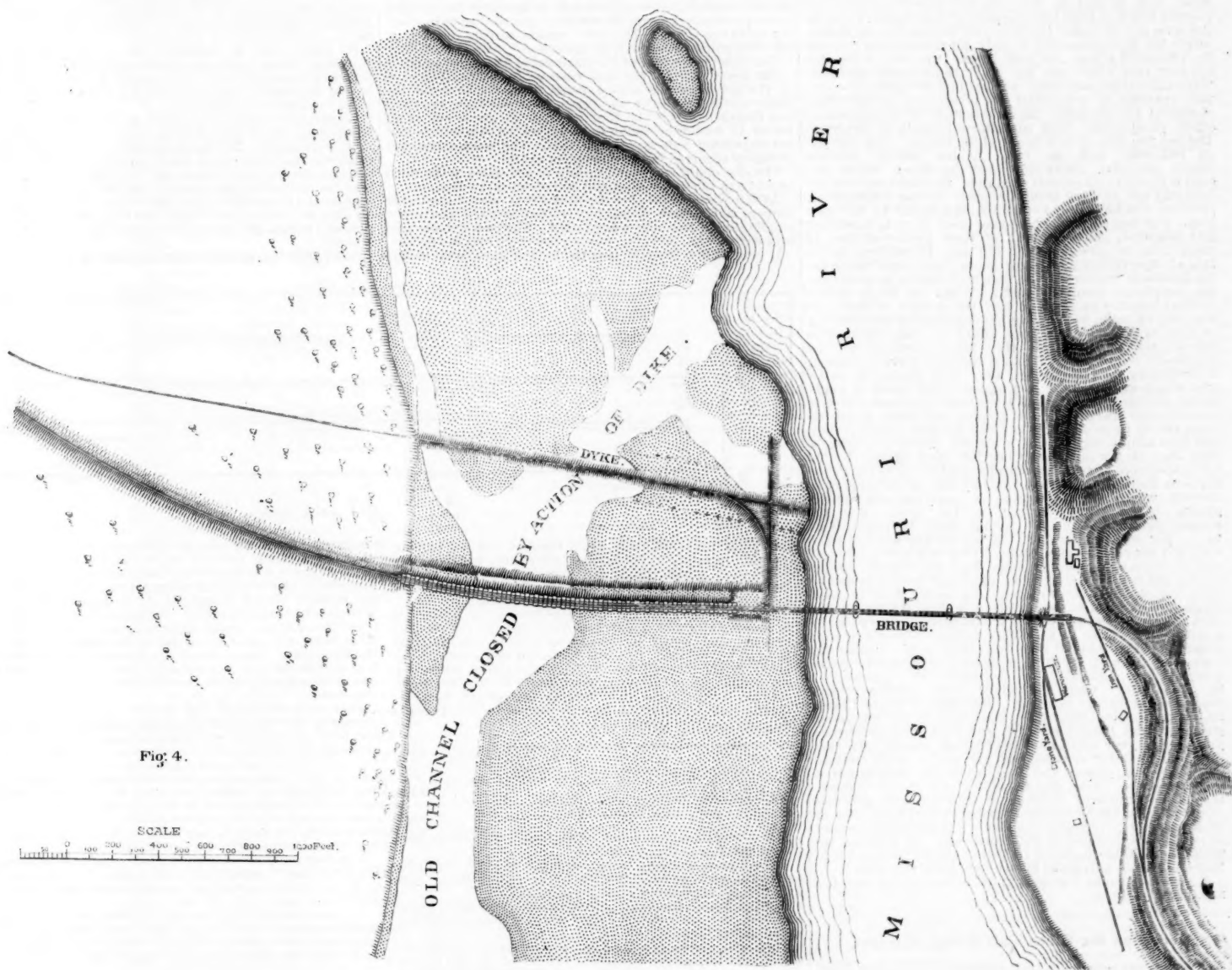
locked or relocked, as the above, both together are to remain automatically locked out of control of the operator till the last car of a train passes the last switch or point of danger. Also, that the signals on that side of the crossing opposite the approaching train remain securely locked throughout all the operations pending the passing train.

At such a location as a single or double track crossing, or the crossing of yard tracks by a single or double track where trains are to pass without stopping, it is to be understood that each of the several intersecting tracks shall be provided with switches and signals as above, and that all the switches and signals at location shall be so interlocked that in the operations attending the passage of a train or engine over one of the tracks, the unlocking of the switches in that track shall, before completely unlocked, absolutely lock, to the normal condition, the devices operating the switches and signals in all tracks intersecting that track.

Where several parallel or non-intersecting tracks are crossed by other tracks, it is to be understood that two or more of the parallel tracks may each simultaneously pass a train under the same rules as for any one of those tracks separately.

Any turnout from a track between a switch and crossing, on which a train may reach a crossing, is to be treated as a crossing track.

That all the devices and appliances at a crossing as above



MAP OF MISSOURI RIVER CROSSING AT BISMARCK, NORTHERN PACIFIC RAILROAD.

and in the early winter was finally closed by filling the pile bridge with earth. The dyke has been finished at about the level of ordinary summer high water; it has been maintained for two seasons against the full current of the river, the only weakness shown being a settlement some distance back from the end, which occurred during the summer flood of 1882. (The map, fig. 4, shows the present location of the channel and of the bridge.)

There have been used in the construction of this dyke 30,000 tons of granite boulders for rip-rap, besides a large quantity of brush and crib-logs, and upward of 28,000 cubic yards of clay.

The action of the dyke has been such as to satisfy the engineers of the correctness of their plans. The river has been permanently confined to a width of 1,000 ft. adjoining the east shore. A thick growth of willows has started spontaneously on the deposit formed by the river in what was the main navigable channel adjoining the west shore. The course of the channel is gradually improving.

The elevation of the top of the dyke was purposely fixed at about the level of ordinary summer floods, this height being thought likely to secure a larger deposit both above and below the dyke than if finished at a higher level. When the ice goes out, about the first of April, the water usually rises some feet above the top of this dyke, and a secondary embankment, intended only to resist the action of ice, has been built immediately alongside of the trestle approach, this embankment finishing nearly 20 ft. higher than the top of the dyke.

Next week we expect to give a description of the bridge itself, and the foundations.

signals is a near signal situated near the derailing switch and capable of being locked to danger and the other a distant signal capable of being locked at danger and situated so far from the derailing switch that any train or locomotive moving past that signal can easily be brought to rest before reaching the derailing switch.

That this switch and the two signals be interlocked in such a way that their operations must follow in certain sequences, and that for the normal condition, or when no trains are moving, the switch be set and locked to derailment, and the signals be set and locked to danger.

That the interlocking appliances so operate that when a train approaches to cross without stopping, the derailing switch be unlocked, set to line, and relocked by the locks on the switch itself, and that the devices by which this switch is relocked shall, when completely relocked, unlock the two signals. These signals are then to be cleared for the coming train, the operations of which are automatically to lock the switch locks beyond the control of the operator until the last car of the train has passed the switch, and until the cleared signals are restored to signify danger.

That each signal may be set to danger as soon as the locomotive passes it, and that the switch be restored to derailment as soon as the last car passes, but not until the signals are restored to danger, thus restoring all to the normal condition.

Where trains run both ways on a given track at a crossing, it is to be understood that the switch and two signals as above are to be placed in that track on both sides of the crossing; and that in such case the two switches are to be operated in conjunction as one; that is, both together are to be un-

be protected so that no meddler can interfere with the correct working of the apparatus by the operator.

It is also recommended that any turnout between a near and distant signal be provided with a switch and signal, to be operated by interlock with the crossing appliance, in such a way that the signal must be locked to danger and the switch locked to the main line by the operation of unlocking the main line switches. And, it is also recommended, that an electric annunciator be arranged in connection with each track, so that the approach of a train will be signaled to the operator from a point at a considerable distance beyond the distant signal.

The New England Railroad Club.

The regular monthly meeting of this club was held in Boston on Wednesday evening, Nov. 14. About 40 members were present. Mr. J. W. Marden, Vice-President, presided, and Mr. E. Jennings, of West Bergen, N. J., was introduced to the Club, and made an address on the subject of steel and its uses in railway service. This gentleman stated that the extensive manufacture of steel in this country did not begin until after the war. In the year 1873 the manufacture of crucible steel ingots in this country had reached the amount of 36,500 tons, after which a period of general depression followed. In 1879 the product increased to 57,000 tons, and in 1882 to 85,000 tons. This is crucible steel alone. The manufacture of Bessemer steel was not commenced here until 1868, although Bessemer secured his patent in 1857.

locomotives so called, to pass at so high a rate of speed as 15 miles per hour over a bridge situated as this was, upon a strong curve and on a heavy down grade."

In the above the Board concurs, and also calls attention to the danger of there being any doubt in the mind of the Superintendent as to who is responsible for the safety of bridges. A somewhat similar case came before the Board on the occasion of a trestle bridge giving way at Scottsville, on the Genesee Valley branch of the Buffalo, New York & Philadelphia Railroad, Feb. 17, 1883. In each case the Superintendent left the repair of bridges to a foreman who was incompetent for the responsible position.

Alonzo Groat, like Alonzo Finn (the bridge foreman in the case above alluded to), while doubtless a good practical bridge carpenter, was totally incompetent to be intrusted with the sole supervision of bridges, being unable, as he admits, to calculate the strains on different members.

Indeed, if he is reported correctly in his testimony before the coroner's jury, he stated that "either the lower chords might have broken under a load and the bridge not have gone down!"

It is hardly necessary to say that a man holding such opinions as this is not safe to be trusted with the inspection and repair of bridges without supervision, when human life is at stake.

The Board also censures the management of the Delaware & Hudson Canal Company, specifically for failing to have the bridges and trestles on its line of roads properly tested and examined.

Through the absence of such an examination under a well regulated system this disaster occurred.

For divided responsibilities and incompetency in the performance of their duties by subordinates, such as is here disclosed, a railroad corporation is primarily and legally responsible.

The Delaware & Hudson Canal Company should at once specifically indicate whether the Chief Engineer or the division superintendents be held responsible for the safety of bridges.

That whoever is indicated make or have made a careful calculation of the strains on the members of each bridge, and that if any members be found insufficient, they be brought within the margin of safety recognized by the best engineering standards of the day: which it is not deemed necessary to specifically prescribe here.

By the Board, WILLIAM C. HUDSON, Secretary.

The New Bridge over the Niagara River.

The connection between the two ends of the new bridge over the Niagara River on the Canada Southern Division of the Michigan Central was completed Nov. 22. We are indebted to the Buffalo Express for the following description of the work:

Between the cantilever arms, which reach out toward each other from either shore, is a space of 120 ft. to be bridged by an ordinary fixed span, which is supported by the lever structure. It was upon this structure that the parts were connected from shore to shore yesterday. As yet there is no passage across for any but the venturesome or the experienced workman.

The first person who went across was McCloy, the well-known river boatman, who was at work on the bridge. The distinction was won on Tuesday. At 10 o'clock a timber was thrown across from one side to the other. The men were all very eager to cross, and an extra degree of nervous venturousness was observed. To check this, Superintendent Ryland gave order that no one should cross until a second timber was thrown across, as he feared the men would rush upon the narrow passage and some one would be drowned. But McCloy couldn't wait. Watching his chance he ran across, achieved the notoriety he sought, and was discharged promptly, according to promise. Afterward workmen crossed at will and others did the same.

The story of such a great undertaking is never fully told without resort to dates and figures. Perhaps it is best told by them, for the dates show the marvelous progress made, and the figures indicate as far as possible the amount of work done. The contract was signed on April 11 last, ground was broken and work begun on the foundations four days later. The laying of the Beton cement began on June 6, and the masonry on June 26. This was finished on Aug. 20.

The construction of the steel towers above the masonry began at once, and on Sept. 8 the American tower was finished. The Canadian tower was finished 10 days later. The derricks and engines were at once removed, and on Sept. 28 work on the cantilevers began on the American side. The arms from the towers shoreward were finished in time to begin construction on the river arms on Nov. 1. The present work is confined to the fixed span, which embraces the space of 120 ft. left by the cantilevers.

It is expected that the bridge will be completed before the specified time, Dec. 1. Failure to fulfill the contract involves the forfeiture of \$500 a day. This contract refers to the bridge proper only—that is, the space across the gorge. The approaches are built by separate contract. That on the American side is building by Superintendent Ryland in connection with the general work, and will be done in a few days. The approaches on the Canadian side are in the hands of Canadian contractors, and are not quite so far advanced.

Now, as to figures. The bridge proper is made up of the horizontal space between the shore abutments and the towers, each 195 ft.; the tower panels, each 25 ft.; the river arms, each 175 ft., and the middle span, 120 ft., making in all 910 ft. without the approaches.

The cantilevers are each 395 ft. long; the distance from the base of the railway rail to the water is 239 ft.; the total weight resting on the towers under the maximum condition of strain is, in round numbers, 8,400 tons; the total uplifting force that can be exerted by the shore arms of the cantilever under maximum conditions is 340 tons on each; the weight of each anchorage to which the shore ends on the cantilevers are fastened is 800 tons. The cantilevers, it must be understood, are heaviest toward shore, so that the weight of the middle span and of passing trains is easily sustained without strain.

The contract was let to the Central Bridge Co., of Buffalo, which has for active members Gen. George S. Fields, Edmund Hays and C. V. N. Kittredge. The railroad company is represented by Chief Engineer C. C. Snyder, who must approve of all work. He is accompanied by a staff composed of A. R. Trew, First Assistant, and J. A. Bell and B. F. Betts, assistants; W. F. Zimmerman, Inspector of iron and steel at the various mills, and Jacob Jung, Inspector of finished material at the shops. The work is directly in charge of S. V. Ryland, Superintendent of Construction; A. Deyo, first assistant; W. A. Lee, Foreman on the American side, and T. P. Sullivan, Foreman on the Canada side.

Mr. Ryland arrived on the spot on July 10, and began the false work on which the bridge has been constructed. Although apparently on the youthful side of 40 years, he has built some of the largest bridges in the country. For 15 years he has been in charge of the bridge operations of

Kellogg & Maurice, of Athens, Pa., during which time he built the celebrated elliptical truss bridge at Smithfield street, Pittsburgh. He also built the 300-ft. double-track two-truss bridge for the West Shore Railway at West Point. Across Snake River, in Idaho, he built a wooden cantilever bridge for false work to an iron bridge, and in 1871 he built a bridge of 260 ft. draw across the Tombigbee River, using temporary wooden trusses instead of false work. He is greatly in favor of the use of travelers in construction, and says that if the Niagara bridge could have been trestled up the work would have cost twice as much as it now has.

In outlines the finished bridge will be perfectly level, with no railing supports. The iron work is quite narrow at the shores and comparatively so at the middle span. From these points it broadens directly to the top of the towers, which gives it an irregular but very stocky appearance beneath. Within these outlines is a maze of braces and supports running in all directions.

There will be two tracks, one of which is already built for the use of hand-cars to aid in the work. Standing only 300 ft. above the old suspension bridge, it presents to it a strong contrast. The wires, railways and fine work of the latter give it the appearance of the finished task of a basket-weaver, while the cantilever is stern and rugged, as though chopped from a block. Just at the foot of the tower, on the American side, the first ripple of the Whirlpool Rapids can be seen. So rapidly does the torrent increase that they are boiling and seething in full violence under the old bridge but 300 ft. below.

Agreement of the Southern Railway & Steamship Association.

Agreed: That the Southern Railway & Steamship Association be continued under the following agreement:

THIS AGREEMENT, made this 24th day of October, A. D. 1888, by and between the Central Railroad & Banking Co. of Georgia, Savannah, Griffin & North Alabama Railroad Co., Mobile & Girard Railroad Co., Atlanta & West Point Railroad Co., Western Railroad of Alabama, Fort Royal & Augusta Railway Co., South Carolina Railway Co., Georgia Railroad Co., East Tennessee, Virginia & Georgia Railroad Co., Norfolk & Western Railroad Co., Memphis & Charleston Railroad, Richmond & Danville Railroad Co., Charlotte, Columbia & Augusta Railroad Co., Columbia & Greenville Railroad Co., Louisville & Nashville Railroad Co., Mobile & Montgomery Railway Co., South & North Alabama Railroad Co., Cincinnati, New Orleans & Texas Pacific Railway Co., Alabama Great Southern Railroad Co., Vicksburg & Meridian Railroad Co., Savannah, Florida & Western Railway Co., Charleston & Savannah Railway Co., Western & Atlantic Railroad Co., Rome Railroad Co., Wilmington, Columbia & Augusta Railroad Co., Wilmington & Weldon Railroad Co., Seaboard & Roanoke Railroad Co., Nashville, Chattanooga & St. Louis Railway Co., Old Dominion Steamship Co., Merchants' & Miners' Transportation Co., Clyde Steamship Lines, Baltimore, Chesapeake & Richmond Steamboat Co., New York & Charleston Steamship Co., Ocean Steamship Co., Boston & Savannah Steamship Co., and also such other transportation companies as may hereafter, by consent of said parties, subscribe hereto:

WITNESSETH, That whereas, the establishment and maintenance of tariffs of uniform rates, and the prevention of unjust discrimination, such as necessarily arises from the irregular and fluctuating rates which inevitably attend the separate and independent action of transportation lines, is important for the protection of the public;

And whereas, it is deemed to be to the mutual advantage of the public and the transportation companies, that business in which they have a common interest should be so conducted as to secure a proper correlation of rates such as will protect the interests of competing markets without unjust discrimination in favor of or against any city or section;

And whereas, these objects can be attained only by co-operation on the part of the various transportation lines engaged in the traffic of the territories south of the Potomac and Ohio rivers and east of the Mississippi River—

Now, therefore, in order to secure such co-operation among the said transportation lines, by providing means for the prompt adjustment of the differences which may arise between them; by placing all of their traffic common to two or more companies under the control of officers jointly elected; by the general conduct of the same, under well-defined rules and regulations, and by just and equitable divisions of business, such as will naturally ensue from the maintenance of rates, or by actual apportionment; it is mutually agreed as follows:

First.—That the organization herein provided for may include all such railways east of the Mississippi and south of the Potomac and Ohio rivers, and the steamship lines connecting them with Boston, Providence, New York, Philadelphia and Baltimore, which transact business with each other; provided, such parties are included in this agreement, or may hereafter be admitted as parties thereto by the action of a general convention; and that the Association herein formed shall be styled "The Southern Railway & Steamship Association."

Second.—That the representatives of the several companies, members of the Association, shall meet in convention annually, on the third Wednesday in October, in the city of Atlanta, or at such other places as may be mutually agreed upon; and special meetings may be called at any time, as hereinafter provided.

Third.—The business to be transacted in general convention shall be confined to the election of officers and fixing their salaries, the admission of new members and their representation on the Executive Committee, and the adjustment of such matters as cannot be properly determined by the Executive Committee with the aid of the Board of Arbitration. Each company, a member of the Association, shall have one vote. Two-thirds of the whole vote of the members present shall be required to make the action of the Convention binding. Companies, members of the Association, may be represented in the Convention by the President, Vice-President, General Manager, Superintendent, or General Freight Agent, in person, or by proxy; provided, their proxy presents to the Secretary a properly attested power of attorney. In case of more than one nomination being made for any office, the election shall be by ballot.

Fourth.—The Virginia, Tennessee & Georgia Air-Line, Richmond & Danville Railroad Line; Great Southern Freight Line via Savannah; Great Southern Freight Line via Charleston; Louisville & Nashville Line; Cincinnati, New Orleans & Texas Pacific Line; Savannah, Florida & Western Line; Western & Atlantic Railroad Co.; Atlantic Coast Line; Nashville, Chattanooga & St. Louis Railway; Coastwise Steamship Association, shall each designate a representative, who shall be authorized to represent them in all matters of business with the Association or its members, and the several representatives so designated shall constitute an Executive Committee, of which the General Commissioner shall be Chairman. If any company or line which is entitled to a representative fails to appoint one, or if their representative is not present at any meeting of the Executive Committee, such company or line shall be represented by the General Commissioner, acting as their agent under the authority conferred by this agreement.

Fifth.—The Executive Committee shall meet, at the call of the Chairman, whenever and wherever, in his judgment, it is necessary, or when any three members of the Committee request it; but all such calls must state the object of the meeting and the subjects to be acted upon by the Committee. All absent members shall be represented by the General Commissioner, whose duty it shall be to make himself familiar with their views and interests, so that he can represent them properly; and votes cast by the General Commissioner for absent members, at any meeting, on any subject stated in the call, shall have the same force and effect, in binding such members, as if cast by them in person. Other subjects than those mentioned in the call may be considered and acted on in the meeting of the Executive Committee; but the assent of absent members must be obtained, or the decision of the Board of Arbitration, before such action become binding upon them. The Executive Committee shall have jurisdiction over all matters relating to the joint traffic, but shall act only by unanimous consent of all its members. In event of failure to agree, the questions at issue shall be settled by the Board of Arbitration hereinafter provided for. But this shall not be construed to give the Executive Committee or the General Commissioner any control over the local business of the company, even though such local business may, of necessity, pass through points at which the traffic is divided by apportionment.

Sixth.—The Executive Committee shall have the right, at their discretion, to appoint sub-committees, either of their own number, or from among the other officers and agents of the companies members of the Association, and to delegate to such sub-committees jurisdiction over such matters as may be specially committed to their charge, but the sub-committees shall act only by unanimous consent; and failing to agree, the questions at issue must be referred to the Executive Committee for settlement. The General Commissioner will be, *ex officio*, Chairman of all sub-committees, and, as such, shall be the medium of communication between the sub-committees and the Executive Committee. Absent members of sub-committees will be represented by the General Commissioner, as in the case of absent members of the Executive Committee. During the interim between the reference of any matter of difference from a sub-committee to the Executive Committee and the final determination of such matter, the General Commissioner shall, if it be a matter requiring prompt action, have authority to decide it temporarily; and his decision shall be binding on all parties until reversed by the Executive Committee or by arbitration.

Seventh.—The following officers shall be elected at the annual meetings, and shall hold their offices until the next annual meeting, and thereafter until their successors are elected: A President, a Secretary, a General Commissioner, three arbitrators, an Auditor.

Eighth.—The President shall preside over all general meetings of the Association, certify to the records of such meetings, and communicate the proceedings to all the members. He shall call a general meeting of the Association whenever he is requested to do so by three members of the Executive Committee, or whenever it is, in his judgment, necessary to do so.

Ninth.—The Secretary shall make complete and accurate records of the proceedings of all general meetings of the Association, the originals of which shall be preserved in the general office of the Association, and copies furnished to each member. He shall also act as Secretary to the Board of Arbitration, and to the several committees hereinafter provided for, and preserve similar records of their proceedings.

Tenth.—The General Commissioner shall be the Chief Executive Officer of the Association, and, as the representative of its members both severally and jointly, shall act for them in all matters which come within the jurisdiction of the Association, in conformity with the requirements of this contract and the instructions of the several committees hereinafter provided for, but exercising his discretion in all cases which are not provided for either by this general agreement or by the committees acting under its authority and sanction. The General Commissioner shall also take charge of the Green Line car reports and claims, and appoint such clerks and claim agent as may be necessary, and charge up the expense to the roads interested in the Green Line business on an equitable basis, managing the business for the benefit and at the cost of the companies interested.

Eleventh.—The Board of Arbitration shall hear and determine all questions which may be submitted to them under this agreement or by consent of the parties members of the Association, and the decisions of the said Board of Arbitration shall be final and conclusive.

Twelfth.—The Auditor shall have charge of the Clearing-House, and shall keep full and accurate accounts of all the joint traffic, making reports of the same to all members of the Association and to the General Commissioner. He shall keep a ledger account with the General Commissioner and with each member of the Association, from which he shall furnish each company a statement of their account monthly, showing the debits and credits to them at each point at which the business is apportioned, and a general balance-sheet shall be drawn off monthly, and copies furnished to the Executive Committee and to the General Commissioner, who shall cause settlements of balances to be made promptly, distributing the funds deposited to his credit for this purpose, as hereinafter provided, and drawing drafts on debtor companies for balances due in excess of their deposits as shown by the certified statements of the Auditor, which drafts shall be duly honored, notwithstanding errors or omissions, if there be any, which must be adjusted in subsequent settlements.

Thirteenth.—In event of a vacancy occurring in the office of General Commissioner, Arbitrators, Secretary, or Auditor, the President shall fill the vacancy until a general meeting of the Association can be convened to elect a successor, and such meeting shall be called by the President within 30 days after the vacancy occurs.

Fourteenth.—All disbursements of the funds of the Association shall be made by the General Commissioner, who shall give bond, with security in such amount as shall be satisfactory to the Executive Committee, that he will duly and properly account for all moneys of the Association, or belonging to members thereof, which may, in any manner, come into his possession or under his control. No payments shall be made except on vouchers which have been examined, found correct, and certified by the Auditor. Credit shall be given to the General Commissioner by the Auditor, on payments made by him on account of the expenses of the Association or its officers, only on properly receipted vouchers; and such receipted vouchers shall be filed in the Auditor's office, subject to inspection by the Executive Committee, or such person or persons as may be appointed by them for this purpose.

Fifteenth.—When all parties interested in the joint traffic at any point are willing to maintain rates without an apportionment of the business, no apportionment shall be required; but if any one of the parties insist upon an apportionment the question shall be referred to the Board of Arbitration to determine whether or not such apportionment shall be made; provided that nothing herein contained shall be construed to require an apportionment of Green Line business.

Sixteenth.—On all business apportioned on the basis of

revenue there shall be deducted as an initial charge and deposited to the credit of the General Commissioner, by the company which receives the freight, an amount equivalent to 20 per cent. of the revenue to be divided, such deposits to be made in such bank or banks as the General Commissioner shall designate, subject to his order. The amount so deposited shall be credited by the Auditor to the companies or lines by whom they are contributed and shall constitute a fund which shall be applied, at the expiration of the month during which the same has been deposited, to the payment of any balances due by such companies; but after settlement of such balances, if there be any remainder, it shall be returned to the companies to whom it belongs.

Seventeenth.—The Auditor shall be furnished with copies of all manifests issued by the companies members of the Association, for freights which are shipped from or destined to points at which the business is divided by apportionment, such copies to be forwarded at the time the shipments to which they appertain are made, and abstracts of all such manifests shall be furnished to the Auditor at the expiration of each month. The tonnage books of every company in the Association shall be open at all times to the inspection of the Auditor, or such agents as he may from time to time appoint, for the purpose of enabling him to get a complete record of all freights shipped to or from points at which the business is divided by apportionment.

Eighteenth.—In apportioning business, cotton, and any other freight which it may be practicable to divide in kind, shall be so divided, and not by allotment of revenue. Each company or line shall be required to carry its allotted proportions as nearly as possible; but settlements must be made monthly for any excess carried as provided for in Section 19; provided, that no penalty shall be imposed upon a company or line which carries an excess, for the benefit of any company or line that refuses or willfully neglects to carry its allotted proportion.

Nineteenth.—All divisions by apportionment of tonnage or revenue shall constitute a special agreement between the companies or lines terminating at or passing through the point at which the apportionment is made, and the terms of such agreements shall be adjusted with reference to the circumstances of each case between the parties, or by arbitration, if they cannot agree. The companies to which the allotments are made shall determine the sub-divisions thereof, and shall be responsible for the settlement of all balances for excess carried by them. Companies or lines which carry an excess shall be allowed 20 per cent. of the revenue for transporting the same.

Twentieth.—When, by reason of any actual difference in the rate or premium for insurance against marine risks, any line is at a disadvantage in competing with any other water, or combined rail and water line, such inequality may be obviated by an arrangement with the insurance companies, individually or collectively, by which the transportation lines can assume or pay the difference between the premium or rate of insurance by their own line, and that by the lines or their competitors, and thus secure the same premium or rate of insurance by all lines. In cases of competition between all-rail lines and water or combined rail and water lines, the latter may assume the whole of the premiums or rates for insurance against marine risks, and bills of lading to this effect may be issued. It is, however, distinctly understood and agreed, that no reduction of the established tariff of rates, rebates, or considerations of any kind, shall be given or offered to influence shippers or to secure their preference for any road or line.

Twenty-first.—The Executive Committee shall organize such a system for the rendition of tonnage and revenue reports of the joint traffic throughout the territory covered by the Association as shall enable the General Commissioner to be at all times fully informed of the movements thereof, and the observance of rates established therefor, in order that he may detect promptly any violation of rates, and keep the several companies or lines informed as to whether they are in excess or deficit, at such frequent intervals as may be necessary to effect a distribution of the business in accordance with the agreed division thereof, and thus prevent the accumulation of balances in excess of the deposits made to secure the same. For these purposes, committees may be appointed, or joint agencies may be established by the Executive Committee at their discretion; provided, that such committees shall represent impartially all parties interested, and that all nomination of agents shall be made by the General Commissioner; and provided, further, that the necessary expenses of all such committees and agencies shall be borne by the Association, and distributed among its members as hereinafter set forth. Tonnage and revenue statements shall be rendered monthly to each member of the Association, and also annually to the 31st day of August, in a report to be made by the General Commissioner and Auditor at the expiration of each year, and distributed to the members at least two weeks before the annual meeting.

Twenty-second.—Members of this Association shall not enter into any agreements relative to the joint traffic covered by this contract with transportation companies not members of this Association, except with the approval of the Executive Committee or the General Commissioner and in accordance with the rules and regulations of the Association as herein set forth and as supplemented by the Executive Committee as hereinafter authorized or allowed.

Twenty-third.—In order to defray the expenses of the Association there shall be assessed annually, on each member thereof, a tax of \$300, which shall be applied to paying salaries of general officers and toward other general expenses, such as office rent, printing, etc.; and such additional amount may be assessed on the different members *pro rata*, according to their gross revenue derived from the joint traffic, as may be necessary to meet these and all other expenses of the Association.

Twenty-fourth.—The Executive Committee shall have authority to make, from time to time, such rules and regulations not inconsistent with this agreement as may be necessary to secure a systematic conduct of the affairs of the Association and attain the objects for which it is formed.

Twenty-fifth.—This contract takes effect the first day of January, 1884, and shall terminate on the 31st day of December, 1884.

History of the Milwaukee & St. Paul's Relations with the Omaha Pool.

The Chicago Tribune of Nov. 20 has the following, which evidently states the views of the old members of the Iowa Trunk Lines Association—that is of all but the Milwaukee & St. Paul itself:

In order to place the responsibility for the havoc that is sure to come, a representative of the Tribune was permitted yesterday to peruse papers and documents bearing on this trouble which are of great interest, and which show that the storm has been brewing for nearly a year past. It appears that for the first five or six months after the reorganization of the Iowa pool, Oct. 1, 1882, the Milwaukee & St. Paul ran behind its allotted percentages. From December, 1882, to April, 1883, a large amount of business was turned over to the Milwaukee & St. Paul each

month to equalize the pool percentages. Feb. 27, 1883, the Commissioner issued an order that all west-bound freight from the Lake Shore and Michigan Central Railroads be delivered to the Milwaukee & St. Paul for the month of March, and that delivery be made whether freight was specially consigned or not. About the end of February the Milwaukee & St. Paul was still short about \$12,000, which was made good by the pool.

About June, 1883, the Milwaukee & St. Paul suddenly commenced to carry an immense amount of grain from Council Bluffs to Chicago. The other roads, surmising that there was something wrong, investigated the matter and claim to have discovered that the rates were being cut. Shortly afterward the Milwaukee & St. Paul also commenced to carry the bulk of wool, and again it was charged that it was due to rate-cutting. The live stock business did not commence until August and continued until the end of October. In July the Milwaukee & St. Paul sent its General Superintendent and General Freight Agent to Cheyenne, Wyo., there to meet the Stock-Growers' Association of Wyoming.

The Association was then clamoring for reduced rates, and the above-named officials of the Milwaukee & St. Paul, it is said, promised to use their best efforts to bring about the reduction asked for. The Association then appointed a committee, which came to Chicago and held a meeting with the managers of the roads in the Iowa pool and the lines west of the Missouri River that were interested in carrying livestock. Only three roads voted in favor of the reduction. These were the Rock Island, Milwaukee & St. Paul, and Union Pacific. As soon as this action was made known to the Stock-Growers' Association it immediately issued circulars to all the Western stock-growers and shippers that it would be to their interest to ship all their live stock over the Union Pacific, St. Paul, and Rock Island. At the same time the stock-growers and shippers formed a combination, each one pledging himself to pay \$1 on each head of cattle into a fund. Thus about \$40,000 was raised. A committee of three was appointed to direct the shipments of cattle to the three above-named roads, and any shipper refusing to allow the stock to be shipped as they directed was to forfeit the amount paid into the above-mentioned fund. About the middle of September last the St. Paul notified Commissioner Midgley that it was not satisfied with the agreement providing for the equalization of tonnage. It took the ground that live stock could not be diverted, and as it was carrying more than its proportion it did not care to further divert dead freight in order to even up live-stock percentages. Nov. 6, 1883, statements were sent out for the settlement of balances to all the roads in the pool due for August and September. The Burlington issued a draft on the Milwaukee & St. Paul for the amount due Nov. 8, and the draft was returned with the indorsement that the Milwaukee & St. Paul refused to honor it. This, it is claimed, was the first instance in the fifteen years' history of the pool that a draft for settlement of balances was refused.

Nov. 14 the general managers and general freight agents of the Iowa pool lines met at Commissioner Midgley's office to take action in regard to the refusal of the Milwaukee & St. Paul to settle balances. The meeting was one of the most interesting and exciting ever held. The Milwaukee & St. Paul, which had previously informed Commissioner Midgley that live stock couldn't be diverted and therefore it would no longer divert dead freight to even up live-stock percentages, took at this meeting the position that it would not settle in money, because the live stock should have been diverted. Mr. Merrill, General Manager of the St. Paul, according to the official report, said he could not understand why the Commissioner had not diverted live stock. The St. Paul was not responsible for carrying more than its proportion of the live stock. It was forced upon it; hence it should not be required to pay the total amount of excess. While the Commissioner had ample authority to divert live stock as well as dead freight, he did not seem to care to divert the former, although he had diverted the latter. The Commissioner said he had not been remarkably successful in diverting dead freight from the St. Paul road, but had experienced no difficulty in diverting from the other lines. The Joint Agent at Council Bluffs had informed him that he had been able to control the business of every road in the Association excepting that of the Milwaukee & St. Paul, and that the agent of the latter had obstructed his efforts to divert.

The St. Paul officials insisted that not only had they carried out the Commissioner's instructions, but during the last four months had made large voluntary diversions. The trouble was the Commissioner had insisted upon giving directions through the general agency at Council Bluffs, instead of through the St. Paul's general office at Milwaukee. Mr. Merrill also denied the charge that his road had cut the rates.

Mr. Potter and other members stated that they were morally certain the St. Paul had cut the rates.

Mr. Hughtitt inquired if any charges had been preferred against the Milwaukee & St. Paul of having cut rates on west-bound business, and if the charges had been proven.

The Commissioner replied in the affirmative. He had received a letter from the Northwestern, dated Oct. 24, charging that a certain Omaha firm was being paid a rebate of \$5 per car on shipments of agricultural implements from Racine to Omaha. Upon investigation, he found that the firm in question received a rebate of 5 cents per 100 lbs., which makes a cut of \$10 per car. Charges were also made that the Milwaukee & St. Paul had been cutting rates on cement and timber to the Missouri River.

After a further long and acrimonious discussion, Mr. Cable of the Rock Island, moved that the Iowa Trunk Line Association be declared dissolved at 2 o'clock that day, and that the balances shown to be due up to date be paid as declared.

Mr. Hughtitt made the point that the Association could not be terminated unless by unanimous consent.

Mr. Potter would not consent to dissolve the Association until the balances had been paid. If the St. Paul would pay its debts, he would then be willing to vote for a dissolution of the pool.

Mr. Cable's resolution was lost, the Rock Island alone voting in the affirmative.

Upon inquiry the Commissioner stated that any member could withdraw by giving 30 days' notice.

Mr. Merrill said he was dissatisfied with the agreement, and would give the required notice of withdrawal to the Commissioner. He inquired how much time would be allowed before making a definite reply as to the payments of the drafts.

Mr. Cable thought the matter could be determined in one day.

Mr. Potter believed the St. Paul had willfully violated the agreement. In view of its attitude there was in reality no pool. He wished to say that in case the Milwaukee & St. Paul refused to honor its obligations neither the Burlington nor the connections controlled by it would have any further business relations with that road. His roads would withdraw from all agreements with it. This, he thought, was the only way to prevent a repetition of the St. Paul's action. When a road violated its agreement simply because it thought its percentage was too small the other roads should

discountenance such proceedings by commercially ostracizing it.

Mr. Merrill remarked that if the St. Paul had no excuse for a failure to pay the drafts, he would honor them, but again insisted that the Commissioner should have diverted the stock.

Mr. Cable contended that the Commissioner had done all he could and was not responsible for a failure to effect a division.

After further discussion Mr. Merrill said he would give a definite reply Monday as to what the St. Paul would do. The meeting then adjourned.

Nov. 16 Mr. Merrill telegraphed that he would pay the Burlington's draft for settlement of balances for August and September, and on the same day he gave notice to the Association that the manner of conducting its business was unsatisfactory to the St. Paul Company, and that at the expiration of 30 days it would withdraw from the pool.

THE SCRAP HEAP.

Locomotive Building.

The Paterson (N. J.) Press of Nov. 23 says: "This morning a number of startling rumors were circulated about the city concerning the wholesale discharge of hands at the Rogers Locomotive Works and the reduction of wages at the Grant Works. As usual these rumors were greatly exaggerated, but for a change there was some foundation for them. Stories of this kind have been circulated freely for some time, but up to the present there has been no foundation for them, the discharges, if any, occurring on account of a different arrangement of work or because one department was too far ahead, in which case the discharges were only temporary. In the Grant Works there has been a general reduction of wages of the employees, it is claimed for the purpose of making them even with wages paid in other shops. This shop has been running over time and pushing the large order received some time ago from the Pennsylvania Railroad, and on this account the schedule was rather high. The reduction was accepted by all the men. Some were dissatisfied of course, which was but natural, but there was no disposition to resist the reduction. In the Rogers Works a total of about 150 hands were laid off, the reason assigned being a scarcity of orders. These works have also employed an unusual number of hands for some time on account of orders crowding in. The full complement of hands is generally supposed to be about 1,900, but of late as high as 2,000 have been employed. This working force has now been cut down to about 1,850, so that nearly the full complement of hands is still employed. There is nothing at all in these facts at which to become alarmed. Inquiries among men interested in the building of locomotives show a very good feeling, and no more hands will be laid off, at least not until after Jan. 1, and even then any large discharge is extremely doubtful. The matter stands as follows: The works have been overrun with orders for some time, but the extraordinary demand of the market is about supplied, so that what is left is what is generally wanted; engines will be wanted to take the places of worn out engines and others will be wanted for new roads. The industry has settled down to its normal condition. Should no further orders come in between this and Jan. 1, the Rogers Works may be compelled to lay off more hands, but the possibility of no further orders being received is so extremely small that there is very little doubt but that the works will run along with their present supply of hands for an indefinite period. Orders have been coming in steadily for some time, and it is certainly not to be expected that they will cease to come in altogether. There is consequently no cause for alarm, and as long as the proprietors of the works express a hopeful and even a confident feeling there is no reason why the employees should become discouraged."

The Taunton Locomotive Works in Taunton, Mass., recently delivered a new passenger engine to the Boston & Providence road.

The Old Colony Railroad shops in South Boston have recently completed a new engine for running fast trains and a new shifting engine for use in the Boston yard. The shifting engine has 15 by 22 in. cylinders and 4½ ft. drivers. The freight engine has 18 by 24 in. cylinders and 5 ft. 3 in. drivers. The boiler is of steel, and the engine has Richardson's balanced slide valves.

The Cooke Locomotive Works in Paterson, N. J., are building two locomotives with 18 in. cylinders for the Cape Fear & Yadkin Valley road.

The Manchester Locomotive Works in Manchester, N. H., recently completed two locomotives for the Boston & Lowell road.

Car Notes.

The Barney & Smith Manufacturing Co. in Dayton, O., is building 12 sleeping cars for the Canadian Pacific road.

The Boston & Albany shops at Allston, Mass., last week turned out 25 new White Line box cars.

The Eastern Railroad shops in Salem, Mass., have begun to build six passenger cars and a number of freight cars for the road.

The Tredegar Co. in Richmond, Va., recently delivered 44 freight cars to the Cape Fear & Yadkin Valley road.

The Pennsylvania Railroad shops at Altoona, Pa., have received orders to build 1,000 gondola cars for the bituminous coal trade.

The Laclede Car Co., a new concern, is building shops in St. Louis for the manufacture of street cars.

The Michigan Car Co. in Detroit, Mich., is turning out 20 cars a day from its works. The company has orders on hand for a large number of refrigerator cars for different roads.

Bridge Notes.

The Central Bridge Co. of Buffalo and New York, recently completed a bridge over the Coosa River in Alabama for the Georgia Pacific road. It has four spans of 155 ft. each.

Iron Notes.

The St. Louis Bolt & Iron Co. has started up its new mill in East St. Louis, Ill., which is to be used entirely for the manufacture of light rails, including street rails.

The Pittsburgh Bessemer Steel Co., at Homestead, near Pittsburgh, has just completed an order for 17,000 tons of steel rails for the Louisville & Nashville road.

The Helmbacher Forge & Rolling Mill Co. in St. Louis is now running all its works. The forge recently completed a steamboat main shaft 30 ft. 6 in. long and 16 in. diameter, and is making another about the same size.

Callie Furnace, near Clifton Forge, Va., owned by Hileman, Waring & Co., went into blast Nov. 1, after a short stoppage.

Manufacturing Notes.

The Union Safety Frog & Switch Co. has been organized in Richmond, Ind., with \$100,000 capital, to make switches, frogs and other railroad appliances.

The Niles Tool Works, of Hamilton, O., have been consti

tuted sole agents for the West of the Gordon & Maxwell Co., of Hamilton, O., and the Morgan Engineering Co., of Alliance, O., with full authority to represent those companies. The Niles Tool Works have opened a branch office at 153 Lake street, Chicago, under the management of Mr. W. P. Douglass, late of their Eastern Branch, and Mr. John R. Williams, late Mechanical Engineer for the Union Iron & Steel Co., and Consulting Engineer for the Pullman Iron & Steel Co. Every opportunity will there be provided to acquaint purchasers with all the details of their machinery, and they propose to keep on hand at that point as large a stock as the condition of trade will admit of.

Cavett & McKnight, of Pittsburgh, have recently completed for the Pittsburgh Steel Casting Co. a shearing machine weighing 60 tons, which will cut hot steel blooms 8 by 8 in., or hot steel plates 36 in. wide and 4 in. thick.

The Rail Market.

Steel Rails.—The market is quiet, but with a good many inquiries and some large orders pending. Quotations may be put at \$35 to \$36 per ton at mill for large orders and \$37 for small lots. Light rails, for which there is not much inquiry just at present, are quoted at \$39 to \$41.

The Iron Age says: "The Albany & Rensselaer Iron & Steel Co. secured an order from the New York Central Railroad for 10,000 to 15,000 tons, at a price said to be under \$36 at mill. The St. Louis Ore & Steel Co. secured an order from the Wabash Railway for 42,000 tons, at \$38 at mill. Several small lots have been sold at from \$37 to \$39, according to point of delivery and the time specified. Negotiations are in progress for large lots for Western railroads, and competition is quite active. It is likely that the lowest figures yet named may be shaded before the contracts are awarded, but thus far it is denied that the sales have been consummated. We referred a few weeks ago in terms of doubt to a reported sale of English steel rails to go to California, but we have since been assured that the sale was actually made. Exceptional circumstances gave English rails a slight advantage over American rails. At present figures English rails cannot compete with American at any point in the United States, duty paid."

Rail Fastenings.—Spikes, as expected, are somewhat lower, and Pittsburgh quotations are \$2.50 to \$2.60 per 100 lbs. Track bolts are also a shade lower, the quotations being \$2.90 to \$3 per 100 lbs. for square nuts, and \$3.15 to \$3.25 for hexagon nuts.

Old Rails.—The demand for old iron rails is good and the market firm, the prices depending largely on quality. Sales are reported at \$23.25 per ton in Philadelphia for American and \$22.50 for foreign tees, and \$24.50 to \$25 for double-heads.

British Rail Exports.

For the month of October and the ten months then ending the exports of iron and steel rails from Great Britain to the United States and to all countries are reported as follows by the Board of Trade, in tons of 2,240 lbs.:

October.				Ten months.			
1881.	1882.	1883.		1881.	1882.	1883.	
Iron rails.....	4,881	211	24	88,479	21,127	2,583	
Steel rails.....	44,327	23,431	5,575	171,100	102,506	56,877	
Total.....	19,368	23,642	5,599	259,579	183,633	59,460	

This year the exports are not one-fourth as great as last year in October, and not one-third as great for the ten months. The iron exports for the ten months this year are not one-eighth those of last year, and not one thirty-fourth those of 1881.

The October exports this year were considerably exceeded in September and August, but they were larger than the exports in any other month of the year, except January and May, and were but little below the average of this year.

The exports to all countries were:

October.				Ten months.			
1881.	1882.	1883.		1881.	1882.	1883.	
Iron rails.....	7,370	2,128	798	108,606	42,708	22,000	
Steel rails.....	61,446	82,569	58,996	512,370	635,124	638,417	
Total.....	68,816	84,697	59,794	620,976	677,832	660,417	

The decrease in October from last year is so great that it brings down the total exports of the year, which heretofore have been the largest for many years in spite of the great decrease in this country's takings, a little below last year's. The exports to other countries than the United States, which in most months have been much larger than for many years, in October as well as in September were less than last year. For the ten months, however, they were 800,947 this year, against 494,199 last year and 261,397 in 1881, so that on the whole there has been an extraordinary demand for English rails from other countries than the United States this year, and the comparison with October is unfavorable only because this demand was larger than last year also.

In 1881 this country took about four-fifths of all the iron rails exported from Great Britain, last year one-half, this year only about one-eighth of the much smaller total.

In October the only countries that took more rails than the United States were India and Australia, unless it were one of the unspecified "other countries" which together took 25,923 tons, or more than 40 per cent. of the whole.

Train Robbery.

A dispatch from Socorro, N. M., Nov. 25, says: "News reached here to-night of a train wrecking and robbery 4 miles east of Gage station, 13 miles west of Deming. As the east-bound Southern Pacific passenger train passed about 5 o'clock this afternoon it was stopped by seven cowboys who opened fire on the train. About twenty shots were fired. Webster, the engineer, was killed. The robbers removed a fish-plate and spread the rails, throwing the engine, mail car, one coach and the front end of a sleeping car from the track. A brakeman who escaped brought in the first account, which was very meagre. The robbers hung around the wreck until night and then left, taking about \$700 from the express car. Full particulars cannot be learned as the train has not reached Deming. The commanding officer has been telegraphed and the pursuit will be prompt and vigorous. None of the passengers were hurt."

A Cable Road in Idaho.

A company has been organized to build a cable railroad from Bailey, Idaho, the terminus of the Wood River Branch of the Oregon Short Line, to Ketchum, a distance of 10½ miles. It is proposed to work the road on the cable system, running the cables at a speed of about 5 miles an hour. The power is to be applied at a point about half way between the terminus, and the machinery is to be run by water power, Wood River being used at a point where there is a considerable fall.

Capturing a Runaway.

The St. Louis Republic of Nov. 1 says: "In East St. Louis yesterday forenoon the authorities at the round-house of the Toledo, Cincinnati & St. Louis (narrow gauge) Railroad had quite a time in capturing a runaway locomotive. The engine in question was standing on the main track, headed east, in front of the roundhouse. The lever was down, so that if the throttle was pulled the engine would

move forward. It appears that the throttle leaked some, and all at once the engine commenced to go, as the leakage had forced the throttle out. The engineer was not far distant when the locomotive began to move, and he ran as swiftly as he could to catch the engine, but it was constantly increasing its speed and in a short time was going so fast that the engineer could not catch it. The engineer was in a terrible dilemma, as in a half hour a passenger train would be due, and there was that locomotive running wild, with no one on it, to meet the approaching train, and if the engine could not be overtaken and stopped a collision would be inevitable and doubtless a great loss of life and property would be the result. The engineer acted promptly, and as speedily as possible got another engine out of the roundhouse, and it was fortunate there was one there, and with his fireman they started off to overtake the runaway locomotive. The engineer put the pursuing locomotive to its best speed, and after a run of four miles came up with the fugitive. The engineer ran his engine up easily to the other, and the fireman crossed by way of the pilot of the rear engine to the tender of the runaway and reaching the cab soon stopped the fugitive engine, and both were brought back to East St. Louis, arriving but a short time before the passenger train from the East. The engineer's carelessness started the engine and his promptness of action and coolness afterward prevented a collision with the incoming passenger train."

The Old Locomotive "Arabian."

The remains of the old locomotive "Arabian," which was destroyed at the burning of the Pittsburgh Exposition buildings, have been taken by the Baltimore & Ohio Co. to its shops at Mount Clare, Baltimore, where the engine will be rebuilt, using as much of the old material as possible. It will be preserved as a relic of the early history of the road.

A Traveling Smoke-House.

At the depot is a great railway car, painted green, so covered with lettering as to look like it had had a bad attack of alphabetic measles. This car serves a curious purpose. It brings meats here from Chicago. It takes say 50 days to cure bacon. It is put in this "traveling smoke-house," after undergoing the curing process for say 25 days, and is then shipped here, curing all the time. It gets here in good shape. Mr. A. A. Thompson, to whom the car is consigned, gives us the information.—*Raleigh (N. C.) News and Observer.*

Locking Out for the Brakeman.

The following rule is in force on the Terre Haute & Indianapolis road:

"Great care must be exercised by all persons when coupling cars. Inasmuch as the coupling apparatus of cars or of engines cannot be uniform in style, size or strength, and are liable to be broken, and from various causes to render it dangerous to expose the hands, arms or persons of those engaged in coupling between them, all employees are enjoined, before coupling cars or engines, to examine so as to know the kind and condition of the draw-head, draw-bar, link and coupling apparatus, and are prohibited from placing in the trains any car with a defective coupling until they have at first reported its defective condition to the yard master and conductor. Sufficient time is allowed and may be taken by employees, in all cases, to make the examination required. Coupling by hand is strictly prohibited in all cases where a stick can be used to guide the link or shackle; and each yard-master, switchman, brakeman or other employee who may be expected to couple cars is required to provide himself at all times with a stick for that purpose."

Trial of an Electric Motor.

The Daft Electric Motor was given a trial on Nov. 24, on the Saratoga, Mt. McGregor & Lake George road, near Saratoga, N. Y. The small motor used hauled a passenger car well filled over a mile and a half of road very successfully, but on the return trip it jumped the track at a sharp curve and was so badly wrecked as to put a stop to the trial for the present. Another test will be made as soon as possible.

The Massachusetts Commission on the Zoar Collision.

The Massachusetts Railroad Commission has made the following report in regard to the recent collision at Zoar, Mass., between a construction train of the Troy & Greenfield and a freight train of the Fitchburg, which was bound for North Adams but was placed on the east-bound track to allow a passenger train to pass, as alleged, by orders of the Troy & Greenfield management:

"The causes of the collision were as follows:

"1. The flagman sent out to guard 26 did not go as far as the rules require, going only from 1,000 to 1,500, instead of 1,800 ft. He also left the track at the critical time, and on his return neglected for a time to use his flag. This was one chief cause of the accident. The flag was not mounted, as the rules require, and was therefore less conspicuous, but whether this contributed to the result no one can say. Train 26 was improperly left on the track without engineer or fireman, but it is doubtful whether this, although wrong, made any difference in the result.

"2. The construction train was not under control as it approached Zoar station. This is evident from the fact that it ran 300 ft. beyond the block signal. Without deciding just how fast it was running, it was plain that it ran too fast, because it ran too far. In excuse it is said that the brakemen were demoralized by seeing their danger, and this view is confirmed by their own statement, showing an almost exclusive regard to their own safety. But this demoralization was a default of duty on the part of the employees of the Troy & Greenfield, and it contributed materially to the accident. In addition to this evidence from results, the record proves that the run from the Hoosac tunnel station was made at the rate of 34 to 35 miles per hour. This excessive speed was a main cause of the collision. Each party being at fault must bear its own loss."

Spikes.

The tool car used by the Erie wrecking gang, with headquarters at Susquehanna, was formerly the "Josie Mansfield," and was the private car of that fair but frail damsel when she was the friend of Jim Fisk and he was Prince of Erie.—*Fort Jervis Gazette.*

It isn't every time that the locomotive runs over something alive that a lawsuit follows. Down on the New Orleans Division of the Texas & Pacific the other day an engineer ran over an alligator that was trespassing on the right of way. No suit for damages has been filed as yet, but the Division Superintendent is thinking of discharging that engineer because the alligator was more valuable than a special policeman in protecting the road from tramps.

Malicious Derailments in Mexico.

The Mexican Financier of Nov. 3 says: "We return again to the matter of placing obstructions upon railway tracks. This is a crime that demands energetic measures against it. Steps for its suppression should be taken as severe as those against brigandage, which, thanks to the Rural Guards, has now been pretty well wiped out of Mexico. It should rank with the worst crimes in the calendar and be

attended by the severest penalties, rigidly inflicted. The summary shooting down of every person detected in placing obstacles upon the track would have a healthful effect. Their crime is not only premeditated murder, but wholesale slaughter of human lives. That they have not yet succeeded in causing a serious disaster is a testimony to the careful manner in which the railways are operated and the tracks guarded. But when the railways are in thorough operation as great through lines, and heavy express trains with Pullman cars full of passengers are run at speed day and night, a horrible calamity is liable to be brought about in this way. Only the severest measures will do in this case, for while the scoundrels are permitted to escape with light penalties it will be impossible to put a check upon their infernal doings."

A Great Bridge.

The bridge over the Susquehanna River between Havre de Grace and Port Deposit, Md., on the Baltimore & Ohio's new Philadelphia Branch is to rest on granite piers which will be founded on the bed rock by means of pneumatic caissons sunk after the manner of those at the East River and St. Louis bridges. There are to be five of these caissons, each about 40 by 80 ft. in area, and they are to be sunk to depths varying from 50 to 85 ft. below water surface. The grade line will be 90 ft. above water, there being no draw. When crossed by the Baltimore & Ohio the river is over a mile wide, and is divided into two channels by an island. Thus there will, in reality, be two bridges. The longest span is to be 520 ft. and most of the remaining ones 400 ft. each.

RAILROAD LAW.

Charter Exemption from Taxation Not Transferable.

A despatch from Washington, Nov. 19, says: "Among the decisions handed down to day by the Supreme Court was one case, No. 765, the Louisville & Nashville Railway Co., plaintiff in error, vs. Manuel Palmer, collector, etc., in error, to the Supreme Court of Florida. The question presented by this case is whether the line of railroad which was commenced, partly completed and operated by the Alabama & Florida Co., and which through successive transfers has finally come into the hands of the Louisville & Nashville Railway Co., is or is not exempt from taxation by virtue of an act passed by the Legislature of Florida in 1855, and known as the Internal Improvement act. This Court holds that the exemption from taxation created by the 18th section of the Internal Improvement act of 1855 is in every respect similar to that which was declared by this court in the case of Morgan vs. Louisiana, 93 United States, 217, to be non-assignable. Such exemption, therefore, did not pass from the Alabama & Florida Railroad Co. to the Pensacola & Louisville Railway Co., when the former conveyed to the latter its road and franchises connected with and necessary in its construction and operation. Even, however, if such exemption had passed to the Pensacola & Louisville Railway Co., that corporation would have had no power to further convey it, so that the line of railway in its present hands is property liable to state taxation, and its present owners cannot claim immunity on the ground that the act of 1875, taxing property of all corporations, was an impairment of the obligations of the contract of 1855. The decree of the Supreme Court of Florida is affirmed with costs. Opinion by Justice Matthews. Five other railroad corporations in Florida claim immunity from taxation on practically the same ground which was assumed in this case."

Employees' Waiver of Claim for Damages.

A dispatch from Atlanta, Ga., Nov. 20, says: "The Western & Atlantic Railroad under its present management, the President of which is Senator Joseph E. Brown, requires all employees upon entering the service of the company to sign a contract waiving all claims for damages in case of death or injury while in the employ of the company. This waiver is styled the 'death warrant.' Touching this matter the Supreme Court to-day, in the case of Cook vs. the Western & Atlantic Railroad, delivered an important opinion. The case involved the legality of the 'death-warrant' clause. In 1872 and in 1873 decisions were rendered sustaining this 'death-warrant' clause, but the act of 1876 made it a penal offense for any railroad employee to be guilty of negligence. Under this act and following the policy of the law, the Court this morning tendered a decision in favor of Cook that will have the effect of completely wiping out the waiver in railroad contracts known as the 'death warrant.'"

Liability of Company for Fault of an Employee.

In the United States Circuit Court on Saturday judgment was entered in favor of Thomas H. Rae and against the Grand Trunk Railway Co. for \$4,934, and as it is important in that it shows the responsibility of railroad companies, a brief history of the case is appended.

The plaintiff was in the employ of the Grand Trunk in the capacity of switchman in October, 1881. One night he was coupling cars and was crushed in both shoulders by the cars coming too close together, owing to a defect in the drawbar of one car. The defect was not discovered by the company at the time the car was inspected. As is generally known, all roads centering at the larger places have inspectors to determine whether or not the road will receive a car which is offered for transportation by another road.

These inspectors are servants of the receiving road, and, of course, the switchman who couples the cars is also a servant of the receiving road, and the legal question often involved is whether they are technically "fellow servants," because if they are, the servant who is hurt cannot recover damages, on account of the strict rules of the common law, from the master. They have been decided to be "fellow servants" by the Supreme Court of Michigan, and thus an injured switchman is effectually barred from bringing suit in the Michigan state courts.

But the United States Courts have laid down quite another rule. In substance it is that any servant who is doing any duty properly belonging to a master, such as inspecting, is not a "fellow servant," but stands in the stead of the master. Consequently, if he pass cars either by the master's direction or by his own judgment, which are defective, and he could have found out the defect, then the master is liable.

The Rae case has been tried three times, and each time Judge Brown has been of the opinion that the plaintiff ought to recover by the rules of the United States Court above mentioned. The case came up on a motion for a new trial before a full bench on Wednesday, and after an elaborate argument on both sides, both Circuit Judge Baxter and District Judge Brown gave an opinion in full that the above decision was correct.

It will be seen that this places the Michigan state court directly opposed on this question to the United States Court. The railroad lawyers of this state have fought for many years to obtain the Michigan idea, and have succeeded in the Michigan courts. Some of the states have even passed legislative acts to the effect that the master is liable.—*Detroit Free Press, Nov. 25.*



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EDITORIAL ANNOUNCEMENTS.

Passes.—All persons connected with this paper are forbidden to ask for passes under any circumstances, and we will be thankful to have any act of the kind reported to this office.

Addresses.—Business letters should be addressed and drafts made payable to THE RAILROAD GAZETTE. Communications for the attention of the Editors should be addressed EDITOR RAILROAD GAZETTE.

Contributions.—Subscribers and others will materially assist us in making our news accurate and complete if they will send us early information of events which take place under their observation, such as changes in railroad officers, organizations and changes of companies, the letting, progress and completion of contracts for new works or important improvements of old ones, experiments in the construction of roads and machinery and in their management, particulars as to the business of railroads, and suggestions as to its improvement. Discussions of subjects pertaining to ALL DEPARTMENTS of railroad business by men practically acquainted with them are especially desired. Officers will oblige us by forwarding early copies of notices of meetings, elections, appointments, and especially annual reports, some notice of all of which will be published.

Advertisements.—We wish it distinctly understood that we will entertain no proposition to publish anything in this journal for pay, EXCEPT IN THE ADVERTISING COLUMNS. We give in our editorial columns OUR OWN opinions, and those only, and in our news columns present only such matter as we consider interesting and important to our readers. Those who wish to recommend their inventions, machinery, supplies, financial schemes, etc., to our readers can do so fully in our advertising columns, but it is useless to ask us to recommend them editorially, either for money or in consideration of advertising patronage.

FUEL ECONOMY.

The cost of fuel may be roughly estimated at about 10 per cent. of the whole operating expenses of the railroads. The annual expenditure included under this head is thus a very large sum on many railroads, and therefore it is a matter of surprise that this expenditure is so often, or it may be said is so generally, controlled in such unbusinesslike and unscientific ways on most of our railroads. Very few merchants—and no good ones—would conduct their business without keeping a careful cash account and knowing exactly where every dollar goes to, so that, at any time, their accounts can be examined and it can be known whether they have, or are receiving, full value for their disbursements. The same thing is true of merchandise. If a dealer in any kind of commodities must depend on the integrity, care, faithfulness or good judgment of his employers to receive, use or deliver merchandise, he will keep a careful stock account if he is a good business man, so that he can know exactly at any time how much of anything has been received, its quality, what disposition or use has been made of it, how much is on hand, etc., etc. In the management of railroad business most of the higher officers seem to think that if once it is shown that money is expended for fuel, that is final, and that the cost of fuel is a fixed and unalterable expense, from which there is no escape, and which is incapable of diminution. Their theory seems to be that the traffic, the earnings and the consumption of fuel are always in proportion to each other, and therefore that it is not of much importance to know how much fuel is consumed, because the earnings of the road will always be increased with the fuel bills. This theory and practice are a little like that of some of the Southern farmers in the old days of slavery. The negroes raised corn which was fed to to the hogs and the negroes then ate the hogs. So long as this went on there was not, apparently, any misuse of either negroes, corn or hogs; but somehow the farmers did not seem to make money by the process. The same kind of economic circle exists on many railroads: the company's money is expended for fuel, the fuel is consumed in locomotives, and the locomotives earn money. As suggested above, many railroad officers seem to hold to the theory that so long as this goes on there is no misuse of either money or fuel. The fact is, though, that if our good-natured Southern planter could have saved part of his corn, some of his hogs, or applied the labor of his "colored help" to producing something else besides corn, he would have grown proportionately rich. The application of the same theory to railroads is obvious. The deduction therefrom seems to be so clear that the wonder is why

railroad companies do not all adopt methods for saving fuel similar to those employed by good business men in the conduct of mercantile affairs for keeping account of their cash and stock.

The fact is, though, that to keep correct accounts of the fuel received, how and by whom it is consumed and the work done by it is a more complicated matter than at first appears. The value of such accounts is dependent, too, upon their completeness and correctness, and therefore a very thorough organization and intelligent supervision of the whole system is required. With the present organization of government which prevails on railroads it is extremely difficult to have such a system as is required for the purpose established and maintained.

The first difficulty in the way of doing this is that many of the railroad directors and the members of executive committees, etc., are men with a mercantile training alone. To them one locomotive is very much like another; they do not, can not, and will not understand that, although, like most men, they are very much alike, yet their differences are of the utmost importance. That a very slight change in proportions, an error in setting the valves, size of the grates or adjustment of the exhaust pipes may make a difference of many tons in the amount of fuel consumed in a year, these men cannot be made to realize, and are apt to treat such statements as a kind of superfine enthusiasm of unpractical men.

Now, suppose that, in order to organize an effective system of fuel accounting, the General Superintendent or Master Mechanic should propose to a board of such people the expenditure required to erect structures for handling, weighing or measuring fuel, and the employment of the requisite clerical force for the purpose, in what spirit would his proposition be likely to be regarded? In common parlance, he would run the risk of being "sat upon" unless his board of directors was composed of unusually intelligent men; and it is because so many managers and locomotive superintendents have been subjected to this kind of compressive strain that they are so little sanguine and apparently so unprogressive.

Nevertheless there can be little doubt of the fact that on almost any railroad where no accurate fuel accounts are kept, a very important economy can be effected by keeping such accounts, after charging up all the cost incurred thereby. In these remarks it is not intended to ignore the fact that a railroad company may sometimes find itself in a position in which it is impossible to avail itself of means of economizing. If a company has not the money, and can't get it, it does not help matters much to say that if it should erect structures for handling and weighing fuel, at a cost of \$50,000 or \$100,000, and then expend a number of other thousands annually for keeping the accounts, they could save a large amount of money. There are, however, many railroad companies which are prosperous and can easily command the capital required for the equipment needed to keep account of fuel consumption, which nevertheless go on year after year without knowing whether they are burning much coal or little, in proportion to the work done.

Nothing will be said in this article with reference to the improvement of locomotives, or the mechanical questions involved in their construction. It will be devoted entirely to the accounting, and what may be called the disbursements of fuel.

In keeping a fuel account, the same means must be employed to ascertain whether it is correct that are required in keeping other accounts—that is, it must be balanced. It must be known, first, how much fuel is received, then how much has been disbursed, which latter, with that on hand, should always balance the receipts. Although the truth of these observations is very plain, nevertheless a great many attempts at fuel accounting have failed to accomplish their purpose, simply because it has not been the practice to balance the accounts frequently. Unless a very complete organization and equipment for this purpose have been adopted it is not easy to do it. In the first place, if an account is balanced it is absolutely essential to have correct reports of what is received. When coal is delivered to a company at many different points along its line, at irregular times, there must be a very complete organization to insure that there will always be some one on hand to receive, weigh and account for it, and considerable outlay is often required in supplying scales at all the required points for weighing the fuel received. Then, too, it is essential that what may be called supplemental stations be established at different points on the line of a road, so that, in case of emergency, locomotives may take on an extra supply of fuel. Such extra supplies are liable to be required at all hours of the day and night, and to ensure that there shall always be an agent present at all such and other

stations in the line of a great railroad, to attend to the receipts and delivery of fuel, makes a very thorough organization and the most careful supervision of it essential. Of course, wherever coal is received and delivered, there must be some means of ascertaining the amount taken in and the quantity given out, and if accounts are balanced there must be some way by which the agent can tell periodically how much there is on hand. This means that there must be some sort of structure for storing it, and some appliances for determining how much is received, disbursed, and on hand. All this means expense in the original outlay for structures and appliances, and for their maintenance, and for agents to attend them.

But even after the receipts and disbursements of fuel are all carefully and correctly accounted for, and the accounts verified by periodical balances, it must then be known how much work has been done by the fuel which has been disbursed and consumed. Now it is very difficult to get any correct measure of the work done by a given amount of fuel on a railroad. The weight of train, its speed, the alignment of road, the weather, condition of engine and of the track, and the quality of fuel all have their influence on the amount of fuel consumed, so that unless the matter is followed out and analyzed very carefully and intelligently, wrong conclusions are apt to be drawn, or rather the conclusions which ought to be deduced will not be recognized. The old measure of the fuel consumption of locomotives was per mile run, which was obviously erroneous, because it takes more coal to pull many cars than it does to pull a few. The next step was to estimate the work done by the number of cars hauled, counting two empty cars equal to one loaded one. The error of this method of estimating is shown by the fact that it would not indicate that any work was done if an engine and tender alone were run over a road, whereas, as a matter of fact, it takes about one-third as much fuel to run the engine and tender alone as it does to take them and a moderate train over a line. Obviously then a more correct way would be to count that hauling the engine and tender per mile represents a given amount of work done by fuel, and that each car per mile represents so much more work done. Of course the fuel consumed per engine and tender per mile and per car per mile will vary with the speed, grade, curves, track, etc., and must be determined for each line of road. In running a train through it is impossible to tell how much of the fuel is consumed in running the engine and tender alone, and how much in hauling the cars, but the average amount of fuel burned in running the engines and tenders alone is easily ascertainable for each class by running them over the road on schedule time, without a train, and keeping a correct account of the fuel consumed. Deducting this ascertained amount from that burned in hauling a train of cars would leave the amount of consumption due to the hauling of the cars. It will thus be seen that to have an approximately correct measure of the work done we must know the number of cars hauled per train, which indicates the necessity of keeping some kind of account of car mileage.

Supposing then that we have an organization and equipment competent to keep a correct account of fuel burned by each locomotive, and that we also have some system of car mileage which will enable us to know how many cars are hauled in each train, some railroad men may be disposed to ask what it all amounts to.

Before answering this question it should be observed that the consumption of fuel is, in a great measure, dependent on the care and skill of the locomotive runner and fireman, and on the design, proportions and construction of the locomotive. If such an account as has been outlined is kept, it would soon indicate whether any engines burn an undue amount of fuel or not. If they do, it then becomes a question whether it is due to faults in the men or in the engine. By exchanging the men who run the engines with a high consumption of fuel with those on engines which burn little, it will soon become obvious whether the fault is with the men or the locomotives. The first step is thus taken toward improvement. The faults of engines will not be discussed here, but the way to improve men who run locomotives, as well as those in other occupations, is to make it certain that it will be to their advantage to do their best. The old method of doing, or rather trying to do, this was to offer a monthly premium to the locomotive runner and fireman who ran their engine with the least fuel. To show the inadequacy of this method to accomplish its object let us suppose that a monthly foot-race were established on some road to be competed for by the locomotive runners and firemen, and a premium was offered to the man who came in first. The result would plainly be

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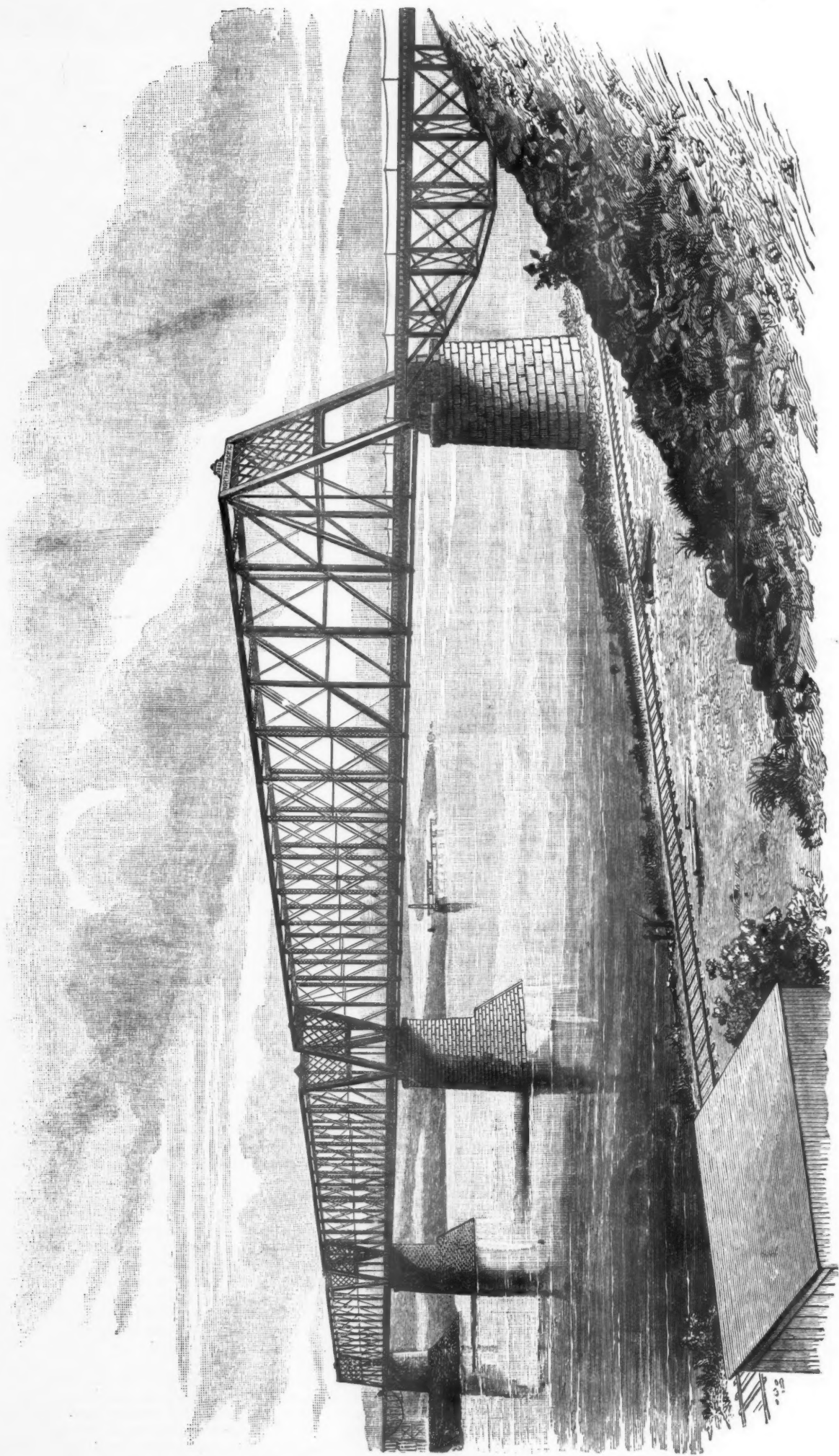


Fig. 1

BISMARCK BRIDGE

OVER THE MISSOURI RIVER, ON THE LINE OF THE NORTHERN PACIFIC RAILROAD.

GEORGE S. MORRISON, *Engineer and Superintendent.*

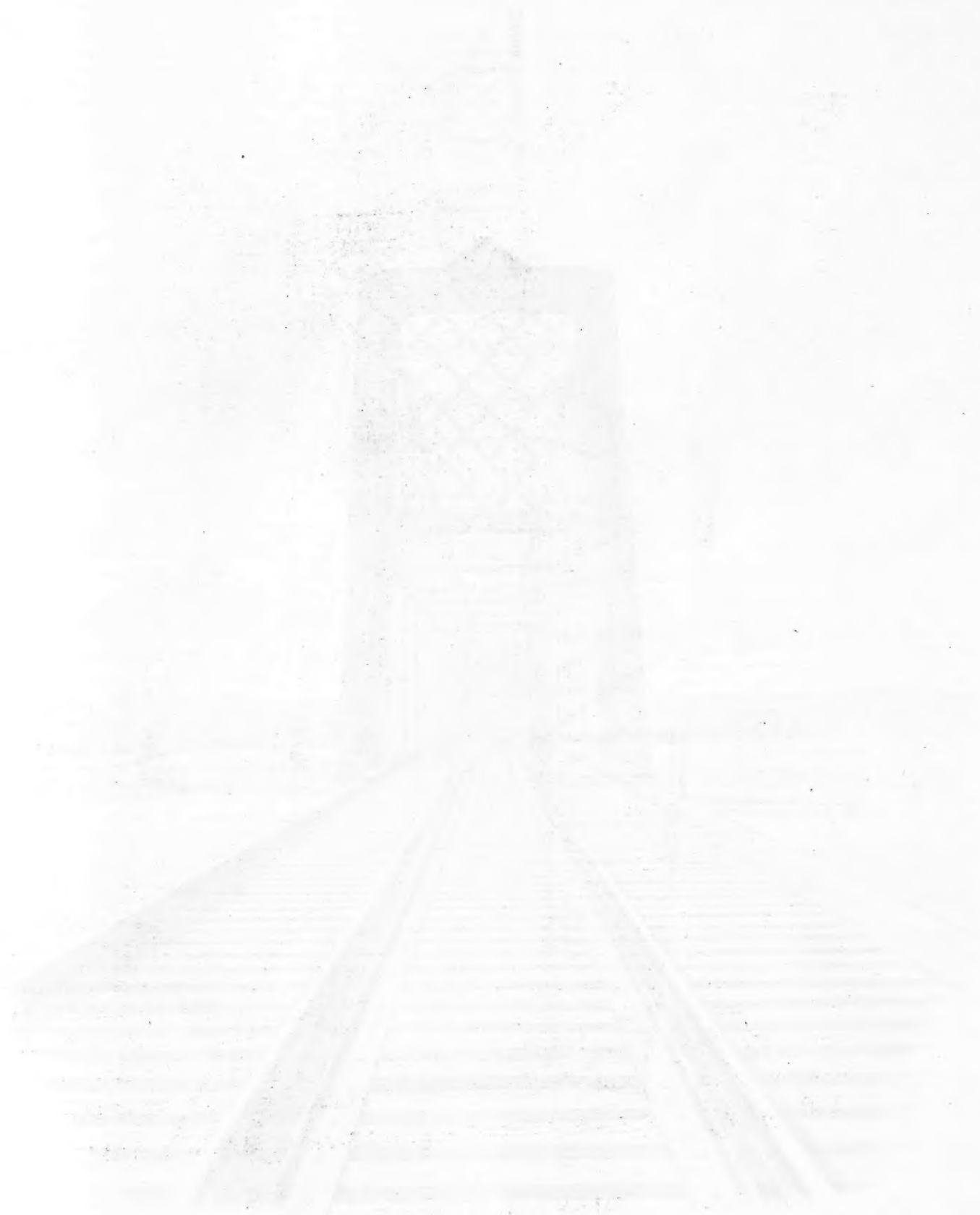


FIGURE 1. A sketch of the building shown in the photograph on the opposite page. The building is a two-story structure with a central tower and multiple wings. It is located on a hill and is surrounded by a fence. The drawing is a sketch and is not to scale.

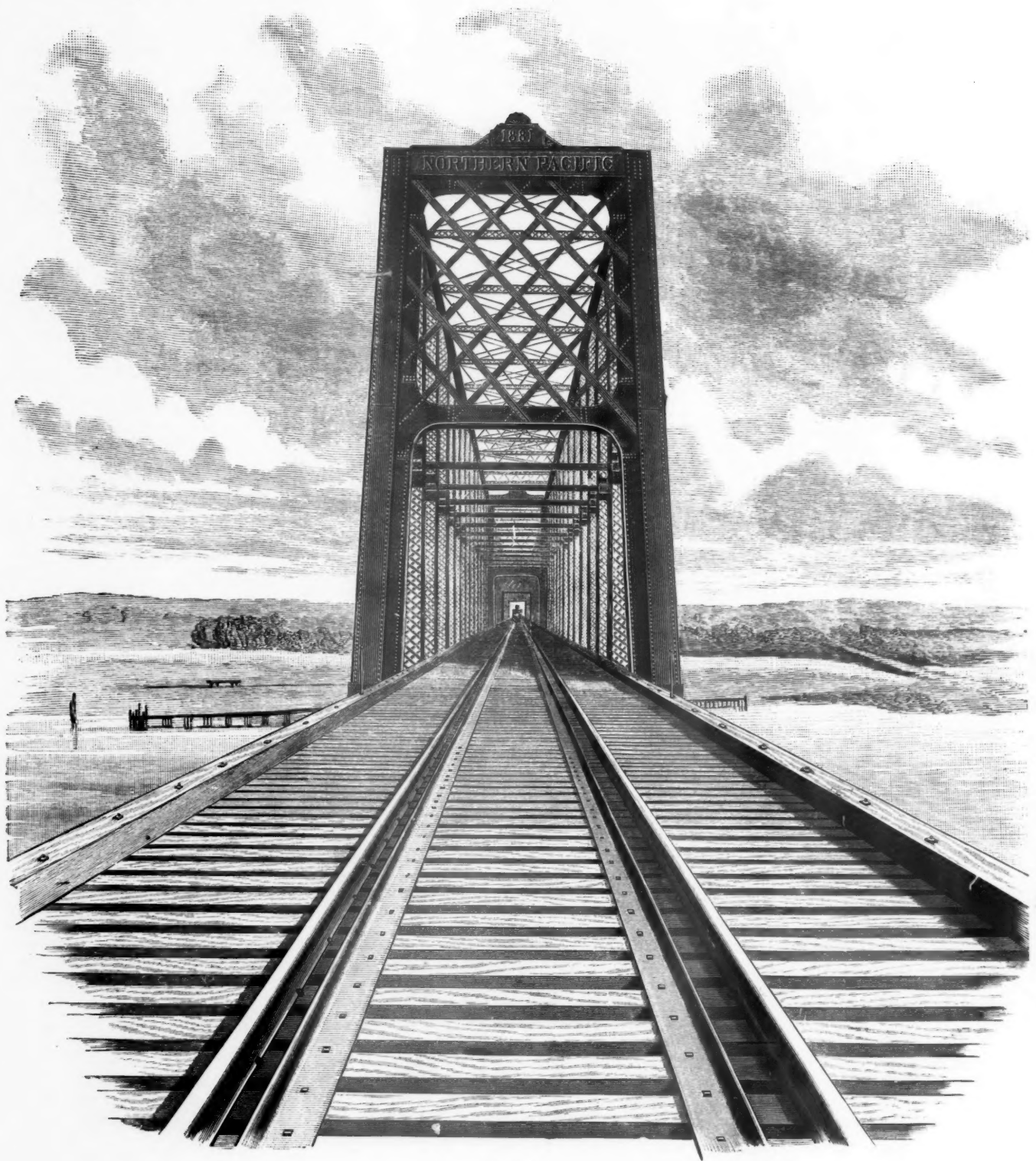


Fig. 2.

BISMARCK BRIDGE

OVER THE MISSOURI RIVER, ON THE LINE OF THE NORTHERN PACIFIC RAILROAD.

GEORGE S. MORISON, *Engineer and Superintendent.*

that a few of the swiftest men would take all the premiums, and the consequence would follow that in a few months none of the rest would exert themselves in running the race. An exactly similar thing occurs when the premium system prevails in the working of locomotives. A few of the best men get all the premiums, and the rest cease to strive for them. To meet this difficulty, on the Pennsylvania and some other railroads, the system has been adopted of rating the fuel to be consumed per car per mile, for the various classes of trains and divisions of the road, and then paying the men for half of all that is saved below this rating. This obviously makes it to the advantage of all the men, whether they have much skill or little, to do their best.

But there is not room to discuss the subject further, excepting to say that the fuel accounting department ought to be independent of the machinery department. A locomotive superintendent is interested in making the best showing for the engines under his care, whereas the person in charge of the fuel accounts ought to be interested only in having the work done at the least cost. It is thought absolutely essential to its efficiency that any system of fuel accounting should be thorough and complete. It is no unusual thing to hear that at some stations fuel is weighed and accounted for, and at others it is not, that the accounts at various stations are never balanced, and that at some places no one is made responsible for the correctness of reports. Such a system, or want of it, is a waste of money. It is absolutely essential, if fuel accounting should accomplish its purpose, first, that the system should be thorough and accurate; second, that it should be presided over by a person of a sufficient amount of intelligence and knowledge of the operation of locomotives to be able to comprehend what such a system of accounting should and can accomplish, and third, in order that such a person may be able to do what ought to be done, he should be limited in authority only by the orders of the general manager.

THE ERIE'S LAST FISCAL YEAR.

At the annual meeting of the New York, Lake Erie & Western Railroad Company last Tuesday a statement of earnings and expenses was made for its fiscal year ending with September last. This statement includes in the gross earnings 68 per cent. of the gross earnings of the leased New York, Pennsylvania & Ohio Railroad for the five months since April, and in the form made this and the working expenses cannot properly be compared with the gross earnings of last year. The statement, however, informs us that the working expenses were 64.78 per cent. of the sum of the total gross earnings of the Ohio road for the five months and the Erie for the year. Now the reported expenses are 64.78 per cent. of \$23,843,368, which is \$1,041,121 more than what the company reports as its gross earnings. This sum must represent the 32 per cent. rental of the Ohio road, and consequently that road's gross earnings for the five months must have been \$3,253,503, and the gross earnings of the Erie system east of Salamanca—the system worked in previous years, with comparatively small changes—were \$19,548,744 last year, which is \$427,030 (2½ per cent.) less than the previous year, though down to the time of the lease (May 1) it had made a gain of \$469,493, so that on the Erie proper we have a decrease in gross earnings of \$896,523 since the lease took effect.

The gross earnings of this old Erie system in each fiscal year since the reorganization have been:

Year.	Earnings.	Year.	Earnings.
1877-78.....	\$15,644,978	1880-81.....	\$20,715,605
1878-79.....	15,942,023	1881-82.....	19,975,774
1879-80.....	18,693,108	1882-83.....	19,548,744

The New York, Pennsylvania & Ohio now being an essential part of the Erie system, which we should expect to be more affected by the recent opening of the Chicago & Atlantic than the Erie itself, it will be interesting to trace the course of its earnings, especially for the five months that the Erie has worked it. We have found them to be \$3,253,503 for the five months this year. Its gross earnings for these five months for the last six years have been:

Year.	Earnings.	Year.	Earnings.
1878.....	\$1,621,344	1881.....	\$2,272,282
1879.....	1,827,341	1882.....	2,479,791
1880.....	2,123,929	1883.....	3,253,503

It seems that there has been an uninterrupted increase in these earnings from year to year, but this year it was no less than \$773,717, which is 31 per cent. For the first three months of the lease the gross earnings of this road were reported to be \$1,775,136 this year, against \$1,595,754 last year, an increase of \$379,382, or 27 per cent., whence we must conclude that in August and September it had an increase of \$394,331, from \$1,084,036 to \$1,478,367, or 36 per cent., a truly enormous gain, made just at the time when the Chicago &

Atlantic was carrying most, and there was a general complaint of a great diversion of traffic by the Erie's freight lines.

The working expenses are not given separately for the New York, Pennsylvania & Ohio, but by adding the latter's expenses for the five months in previous years we can make a comparison which will include nearly the same things for all years—that is, gross and net earnings and working expenses of the Erie for the twelve months, and of the New York, Pennsylvania & Ohio for the five months ending with September, as follows:

	Gross earnings.	Expenses.	Net earnings.
1877-78.....	\$17,266,322	\$11,895,883	\$5,370,439
1878-79.....	17,769,364	12,647,706	5,121,658
1879-80.....	20,817,037	13,141,140	7,675,897
1880-81.....	22,987,887	14,876,516	8,111,371
1881-82.....	22,455,564	14,300,218	8,155,346
1882-83.....	23,843,368	15,444,583	8,398,785

The figures for gross earnings for the last year are larger than those the Erie reports by 32 per cent. of the leased Ohio road earnings for five months; the working expenses are the same; the net earnings are \$1,032,121 more, which represents the rental of the Ohio road together with the profit or loss on the lease for the five months. The rental having been \$1,041,121, we find that there was a trifling loss on the lease.

The comparison would be exact if the same expenditures of the Ohio road were included in working expenses under the lease as before it. This is not the case, however. Considerable amounts are charged as working expenses by the terms of the lease that were not so charged by the lessor company previously, but were charged against net earnings separately—including this company's large payments for use of rolling stock; otherwise 68 per cent. would be a very inadequate allowance for working expenses. If its expenses had been charged in the same way this year as heretofore, the portion of the net earnings due to it would doubtless have been larger. But as the gross earnings of the leased line were but 13.7 per cent. of the gross earnings of the two, it is not probable that the difference on this account is very large in amount—not nearly as much as if the road had been worked under the lease for the whole year instead of five months.

The Erie has a large amount of earnings from various enterprises—ferries, a horse railroad in Jersey City, docks, stockyards, the Buffalo elevator, a baggage express, etc.—which it does not include in its transportation earnings, given above, but reports at the end of the year only. The net earnings (less rental of the New York, Pennsylvania & Ohio lease this year), these other earnings, the interest and rentals, and the surplus of income over the latter (which is the stockholders' income) have been as follows since the reorganization:

Year.	Net earnings.	Other income.	Interest, rent ls. etc.	Surplus.
1877-78.....	\$5,009,114	\$709,812	\$5,091,494	\$625,432
1878-79.....	4,767,324	413,312	3,888,995	1,291,641
1879-80.....	7,049,183	723,937	6,042,519	1,790,621
1880-81.....	7,439,375	844,306	6,416,263	1,887,418
1881-82.....	6,887,680	780,655	6,501,693	1,169,642
1882-83.....	7,357,604	876,790	6,968,978	1,265,485

The miscellaneous income is larger this year than ever before, but not enough so to make the total income available for interest, rentals and dividends quite as large as in 1880-81, when it was \$8,303,681, against \$8,234,463 this year. This year, however, it was \$566,128 (7.4 per cent.) more than last year; but as the interest on bonds and other prior charges increased \$467,285, there is an increase of only \$98,843 in the stockholders' profits, which were less than in 1879, 1880 or 1881, and 33 per cent. less than in 1881. As down to the end of July there had been a decrease from last year's net earnings, and the increase in prior charges was inevitable, the small increase in surplus is more than could have been expected then.

The dividend on the company's preferred stock will absorb \$509,900 of the profits of the year, leaving a balance of \$755,585, which is about 0.9 per cent. on the common stock. Possibly some portion of this may have been required to meet the November coupons of the Chicago & Atlantic first-mortgage bonds, which the Erie guarantees to the extent of its gross earnings from traffic interchanged with that road, which was not in full operation during the whole of the half year, though it was most of it. Whether the Erie incurred any liability for the May coupon, which was due when the road had not as yet had much opportunity to make any net earnings, we do not know. Any payments on this account by the Erie will form an asset—an account payable by the Chicago & Atlantic when the latter has funds available for that purpose.

This statement for the year in connection with that made recently for the eleven months ending with August enables us to ascertain the gross and net earnings of the Erie system for September and compare them with other months since the lease, as follows:

68 per cent. of the New York, Pennsylvania & Ohio gross earnings being included in all cases:

	Receipts.	Expenses.	Net.
May.....	\$2,055,988	\$1,424,933	\$631,055
June.....	2,057,347	1,441,825	615,522
July.....	2,111,456	1,494,683	616,773
August.....	2,580,656	1,480,891	1,100,765
September.....	2,613,135	1,575,723	1,037,413

We find thus that the very large earnings in August, when there was so much complaint of an undue and unfair diversion of traffic by the Erie lines, continued in September; that the expenses, which in August were not as large as was to be expected from the increase in traffic, were still more largely increased (being 60½ per cent. of the earnings in September, but only 57½ in August); and that the net earnings, though less than in August, were very much greater than in any other month. Indeed, the \$2,137,478 of net earnings made in these two months are equal to four months' average net earnings in the other ten months of the year.

If the net earnings of these last two months of the fiscal year, being 45 per cent. greater than the net earnings in the corresponding months of last year (when they were larger than ever before in these months), could be taken as a sample of what the Erie is likely to do hereafter, its future would be brilliant indeed. We would expect the net earnings of the current fiscal year to be something like \$2,600,000 greater than last year, leaving over \$3,850,000 for the common stock, enough for a dividend of \$4.35 per share. Great "booms" in the stock market have been made on a much less basis than this; but it will hardly be safe to count on the Erie's continuing to have 45 per cent. more net earnings than last year. Indeed, we shall expect to find that already the gain is much more moderate than that.

It remains true, however, that the position of the company has been materially strengthened by its control of lines through to Chicago and Cincinnati, which will tend to prevent its losing traffic by the opening of new trunk lines, if it does not greatly increase its traffic. Without this control the completion of two new lines between New York and Buffalo might have very materially reduced its business. The other roads west of Buffalo being already controlled in the interest of the New York Central, the Grand Trunk and the Pennsylvania, the two new roads naturally would have sought connections chiefly over such lines as were independent, namely, those which formed the Erie's chief western connections; and the traffic which these new roads secured might so have been diverted chiefly from the Erie, instead of coming from all the trunk lines, as it will have to now.

Earnings and Expenses of Three Trunk Lines.

The publication of the annual statements of the Erie and the Baltimore & Ohio this week, together with the monthly statements of earnings and expenses made heretofore by the Pennsylvania, enables us now to present the gross and net earnings and working expenses of these three great trunk lines for the year ending with September last, and to compare them with those of last year, as follows:

	1882-83.	1881-82.	Increase.	P. c.
Gross earnings.....	\$23,843,368	\$22,455,564	\$1,387,804	6.2
Expenses.....	15,444,583	14,630,218	814,365	5.6
Net earnings.....	\$8,398,785	\$7,825,346	\$573,439	7.3
<i>Pennsylvania:</i>				
Gross earnings.....	\$51,085,029	\$47,132,793	\$3,952,236	8.4
Expenses.....	32,080,493	29,509,660	2,570,833	8.7
Net earnings.....	\$19,004,536	\$17,623,133	\$1,381,403	7.8
<i>Baltimore & Ohio:</i>				
Gross earnings.....	\$19,730,837	\$18,383,876	\$1,355,961	7.4
Expenses.....	11,034,014	10,929,214	104,800	1.0
Net earnings.....	\$8,705,823	\$7,454,662	\$1,251,161	16.8

* Including New York, Pennsylvania & Ohio for five months in both years.

All the roads have an increase in gross and net earnings and in working expenses. In gross earnings the Pennsylvania's percentage of increase is largest and the Erie's smallest. In every case it is considerable. In 1881-82 only the Pennsylvania had an increase over the previous year, the others a small decrease.

In working expenses the Pennsylvania had the largest increase last year, but the Erie's was considerable, while the Baltimore & Ohio's increase was but trifling; so that in net earnings its percentage of increase was very great—more than a sixth, while the Erie gained 7½ and the Pennsylvania 7½ per cent. in net earnings.

In 1881-82 the Erie and the Baltimore & Ohio had a decrease in expenses, the latter a considerable one while the Pennsylvania had a very large one (12½ per cent.). In the same year the Erie had a large decrease in net earnings (7½ per cent.), while the Pennsylvania had a trifling and the Baltimore & Ohio a considerable increase.

The aggregate earnings and expenses of these three roads for three successive years have been:

	1880-81.	1881-82.	1882-83.
Gross earnings.....	\$83,084,180	\$87,072,233	\$94,607,734
Expenses.....	50,926,870	55,069,092	58,550,000
Net earnings.....	\$32,157,310	\$32,003,141	\$36,057,734

This year the items compare as follows with each of the two others:

	—Gross earnings.—		—Expenses.—		—Net earnings.—	
Over.	Increase.	P.c.	Increase.	P.c.	Increase.	P.c.
1881-82...	\$6,696,001	7.6	\$3,489,998	6.3	\$3,349,003	10.2
1880-81...	11,371,670	13.7	7,632,211	15.0	3,739,468	11.9

The gain is over a year, most of which was bad for through freight traffic on the trunk lines.

The Economic Value of Safety Appliances.

A novel investigation has been made in England by Mr. Frederick T. Haggard, who compares the passenger-train service and the amounts paid as compensation for injuries to passengers on fourteen of the principal English railroads for the three years ending with 1870, when comparatively little progress had been made by them in adopting the block system, interlocking, continuous brakes, etc., and for the three years ending with 1882, when these safety appliances were in very general use. The result is as follows:

	1880-82.	1868-70.	Inc. or Dec.	P. c.
Pass. train miles.....	318,145,751	196,413,028	+ 121,732,723	61.0
Compensation.....	\$655,002	\$862,481	- \$207,479	24.0
do. per 100,000 miles.....	\$205	\$439	- \$234	53.3

That these companies should have been able to increase their passenger train service three-fifths, and at the same time reduce their payments on account of injury to passengers nearly one-fourth, certainly is a very strong evidence that they have, in some way, made travel more safe. The significant figures are those showing the compensation paid per 100,000 passenger train miles. We have no means of knowing just what the passenger traffic on English roads is, as they report no statement of passenger mileage. The nearest approach to it is the passenger train mileage, and as there is nothing to indicate any great change in the average number of passengers per train, the growth of passenger traffic is doubtless nearly the same as that in passenger-train mileage. Then a decrease of from \$439 to \$205 in the compensation payments per 100,000 passenger-train miles indicates that in proportion to the amount of travel injuries to passengers are not half as numerous now as they were twelve years ago.

The number and fatality of accidents may vary greatly from year to year, and the payments for compensation with them; and by selecting an unfavorable early year and comparing it with a favorable late one, the change might be made to appear greater than it really is. But Mr. Haggard has not taken a single year, but a group of three years, to represent each period, and every year of the early period the compensation per 100,000 passenger-train miles was more than twice as great as in any year of the late period, as follows:

	Compensation per 100,000 passenger-train miles.
1868.....	\$449
1869.....	\$447
1870.....	\$421
1880.....	\$208
1881.....	\$208
1882.....	\$202

Of course this does not prove that the greater safety has been due to the introduction of the safety appliances named, and the investigation would have been more satisfactory had the proportion of rolling stock equipped with continuous brakes, of points interlocked, of line worked by block signals, etc., on the fourteen railroads been given for each period. Great progress had been made with some of these in the earlier period. The one which is entirely new is the continuous brake, which it is reasonable to suppose may have had more effect in diminishing the amount of compensation paid than in lessening the number of accidents. For powerful and quick-acting brakes not only prevent many accidents, but they greatly moderate the effect of many others which they do not prevent. The collision which otherwise would have shattered nearly every car in two trains, by the brakes is so much less severe that but one or two cars may be damaged, and the list of killed and wounded is proportionally lessened.

Still it will not be safe to assume that the whole change has been due to the safety appliances named. In other matters, administrative as well as technical, there has been progress in the art of railroading, it is to be hoped; there certainly has been here progress in the matters that make for cheapness, and it is to be hoped, in those that make for safety, though our long and lengthening list of casualties shows that there is plenty of room for further improvement. We can only excuse ourselves by saying that we have added one third to our mileage in about three years, and have to counterbalance the improvements (none too numerous) of our old roads, a huge system of new ones on which, with the exception of brakes, safety appliances are those of an early stage of railroading; and such

things as the block system and interlocking will not be thought of for many years.

The statistics cited by Mr. Haggard show a saving to the railroads in the matter of compensation amounting to £234 per 100,000 passenger train miles in the late period as compared with the early one, amounting to about £259,000, or about \$1,250,000 per year. We have besides, doubtless, a reduction of the damage done the road, rolling stock and freight by accidents, and the losses by interruption of traffic. It is thus shown that the English railroads have saved a considerable sum by means of the safety appliances which they have introduced at an immense expense. No comparison between the expenditure and the saving is instituted, and probably none could be made, because the expenditure cannot be ascertained. In one sense, probably, it could be said that the interest on the expenditure and the gross expense for maintenance ear incomparably larger than the savings indicated above. The block system is very costly to serve, requiring a considerable force of men on duty day and night. But, doubtless, on a large proportion of the lines where the block system has been adopted, it would be simply impossible to conduct the present traffic without it, and to ascertain the actual "saving" due to it we should have to consider, not only the cost of accidents prevented by it, but the cost of additional tracks that would be required by the present traffic without it.

Nevertheless, it is questionable whether the prospect of a direct saving will ever cause the adoption of the costlier safety appliances except on the most crowded roads, unless by law accidents are made even more costly to the railroad companies than they now are. A half-million Revere accident or a million Ashtabula affair is costly enough, it is true, to set self-interest at work vigorously; but it is probably true that it is now cheaper for the railroads of this country to kill people by certain kinds of accidents than to provide the means that would prevent them.

Pennsylvania Railroad Earnings in October.

The gross earnings of the lines of the Pennsylvania Railroad Company east of Pittsburgh and Erie were larger last October than in any other month in the history of the company, and the net earnings have been exceeded but once, in September of the Centennial year, and then only by \$4,526. The earnings and expenses for the month this year and last compare as follows:

	1883.	1882.	Increase.	P. c.
Gross earnings.....	\$4,875,345	\$4,060,053	\$815,292	4.6
Expenses.....	2,659,197	2,632,341	26,856	1.4
Net earnings.....	\$2,216,148	\$2,037,712	\$178,436	8.8

The increase in gross earnings is not very large, but is an increase over what were last year nearly the largest earnings the road had ever had, and made when several industries were in a much less favorable condition than last year. Then the increase in working expenses having been trifling, we have an increase of not less than 8½ per cent. over last year's very large net earnings. In the last three months, which was a time of exceptionally good earnings last year, this road has gained more than \$200,000 each month in gross earnings, and \$158,712 in net earnings.

For eleven successive years the gross and net earnings and working expenses in October have been:

Year.	Gross earnings.	Expenses.	Net earnings.
1873.....	\$3,757,311	\$2,132,285	\$1,625,026
1874.....	3,482,587	2,040,548	1,442,039
1875.....	3,272,267	1,829,433	1,442,834
1876.....	4,004,429	1,821,278	2,183,151
1877.....	3,210,038	1,704,764	1,505,274
1878.....	3,215,417	1,635,871	1,579,547
1879.....	3,518,144	1,832,214	1,685,930
1880.....	3,882,715	2,194,321	1,688,394
1881.....	3,672,971	2,317,930	1,355,042
1882.....	4,060,053	2,632,341	2,037,712
1883.....	4,875,345	2,659,197	2,216,148

The gain of 4½ per cent. in gross earnings this year is, to be sure, small in comparison with the gain of 27 per cent. last year, but it makes a gain of nearly one third in two years, and of 58 per cent. since 1878. The working expenses, which had increased largely every year since 1878, and in 1882 were 58 per cent. more than in 1878 and even 13 per cent. more than in 1881, this year increased but 1½ per cent. The increase in net earnings over 1881 (when they were exceptionally small, however) is no less than 63 per cent., and it is 13½ per cent. over 1880, when until last year they were largest. This large gain in net earnings is especially encouraging.

But there has been a loss on the system west of Pittsburgh and Erie which more than balances this increase of the eastern system. The surplus over all liabilities of this system last October was \$220,408 less than last year, so that the profits to the Pennsylvania Railroad Company from both systems in this month were \$41,972 less than last year. The surplus of the western system in October for five years has been:

	1879.	1880.	1881.	1882.	1883.
\$593,182	\$419,000	\$309,894	\$513,200	\$292,801	

Thus the profits of this system to the Pennsylvania Railroad Company were less this year than in any other of the five.

For the ten months ending with September the earnings

and expenses of the lines east of Pittsburgh and Erie have been for two years:

	1883.	1882.	Increase.	P. c.
Gross earnings.....	\$42,769,257	\$40,548,834	\$2,220,423	5.5
Expenses.....	26,473,559	24,903,920	1,569,639	6.3
Net earnings.....	\$16,295,698	\$15,645,214	\$650,484	4.2

Taking the year as a whole, therefore, the increase in expenses has been larger in proportion than that in earnings, but it still leaves a moderate increase in net earnings.

For these ten months ending with October earnings and expenses have been for eight years:

Year.	Gross earnings.	Expenses.	Net earnings.
1876.....	\$30,343,263	\$18,716,426	\$11,626,837
1877.....	25,216,296	15,793,302	9,422,994
1878.....	26,035,337	15,189,777	10,845,560
1879.....	28,034,356	16,655,316	11,379,040
1880.....	34,137,327	20,022,630	14,114,697
1881.....	36,552,212	21,801,374	14,750,838
1882.....	40,548,834	24,903,920	15,645,214
1883.....	42,769,257	26,473,559	16,295,698

The gain in both gross and net earnings this year is less than last year. The increase in expenses of \$1,570,000 compares favorably with the increase of \$3,102,000 last year, of \$1,779,000 in 1881, and of \$3,367,000 in 1880 (over the year next preceding in each case). The increase in expenses had been so much larger in proportion than the increase in earnings of late years that while in 1882 the gross earnings were \$6,411,500 (19 per cent.) more than in 1880, the increase in net earnings was but \$1,530,500 (10½ per cent.), 76 per cent. of the increase in earnings having been absorbed by the expenses.

The surplus over all liabilities of the system west of Pittsburgh and Erie for the ten months has been:

	1879.	1880.	1881.	1882.	1883.
\$702,018	\$2,505,837	\$2,578,677	\$1,589,981	\$1,168,503	

The decrease in this surplus this year is \$412,478, which counterbalances so much of the increase in the net earnings of the Eastern system, leaving the net increase in the profits of both systems only \$238,006. The profits of the two systems to the Pennsylvania Company—that is, the surplus over all liabilities of the leased western system added to the net earnings of the eastern system, which it works directly, have been for five years:

	1879.	1880.	1881.	1882.	1883.
\$12,081,058	\$16,620,535	\$17,329,515	\$17,326,195	\$17,464,201	

This shows the profits to have been a little larger this year than in any other, but very little different from those in 1881 and 1882, the gains of eastern system having little more than balanced the losses of the western system. The increase over 1880 even is but \$843,766, which is less than 4 per cent., and also less than 4 per cent. on the additions to the capital stock made meanwhile.

Record of New Railroad Construction.

This number of the Railroad Gazette contains information of the laying of track on new railroads as follows:

Cape Fear & Yadkin Valley.—Extended from a point eight miles northwest of Gulf, N. C., northwest 8½ miles; also from Fayetteville, N. C., southwest 2 miles.

Cleveland, Youngstown & Pittsburgh.—Extended south by east to Bergholz, O., 13 miles.

Detroit, Bay City & Alpena.—Extended from Bristol, Mich., northeast to Au Sable, 14 miles. Gauge, 3 ft. 2 in.

Duluth & Iron Range.—Track laid from Agate Bay, Minn., north 15 miles.

Indianapolis & Evansville.—Extended from Oakland, Ind., south by west to Evansville, 30 miles.

Jacksonville, Tampa & Key West.—Track laid from Jacksonville, Fla., south to Orange Park, 12 miles. Gauge, 3 ft.

Pennsylvania.—The National Docks Branch is completed from Jersey City, N. J., to Communipaw, 2½ miles.

Texas Trunk.—Extended from Kaufman, Tex., southeast 15 miles.

West Virginia Central & Pittsburgh.—Extended southwest to the Fairfax Stone, Md., 5 miles.

This is a total of 117 miles of new railroad, making 5,717 miles thus far this year. The total new track reported in our columns to the corresponding date for 12 years past has been as follows:

	Miles.	1877.....	Miles.
1883.....	5,717	1,964	
1882.....	9,255	2,153	
1881.....	6,983	1,776	
1880.....	5,443	1,731	
1879.....	3,263	3,456	
1878.....	2,126	6,559	

The statements include main track only, no account being taken of second tracks or other additional tracks or sidings.

OUR RAIL IMPORTS FROM ENGLAND, as indicated by the British Board of Trade report of exports for October, fell off in that month from the amounts taken in September and July; but they were nearly equal to the average for this year, which has been a very small one. The duty having been reduced July 1 may have caused the small increase in August and September over previous months; but the condition of the manufacture in this country has been such and the largest imports so very small a proportion of the total consumption that we are not safe in drawing any conclusion as to the effect of the change in duty up to this time. Our statistics are for the exports from Great Britain to the United States, and not for the United States imports. The exports which paid the reduced duty began some time before July. For the six months ending with June, and for the four months ending with October, the exports to this country have been for five years, in tons of 2,240 lbs.

	1879.	1880.	1881.	1882.	1883.
Six months to June 30.	7,730	125,578	157,824	121,801	32,255
Four months to Oct. 31.	20,683	62,708	101,848	61,832	27,215

We began to want more rails than we could make ourselves

about August, 1879; the imports averaged 6,140 tons per month in the last half of 1879, ran up to 18,283 tons per month in 1880 and to 24,170 in 1881, than fell to 20,300 in the first half and to 12,217 in the last half of 1882, while this year so far they have been at the rate of 5,947 tons per month. Briefly, we may say that the imports began to increase in the last half of 1879, became large in 1880 and continued so until the middle of last year, then fell off rapidly and for the last twelve months have been comparatively very small, the largest being 9,511 tons last August, and the smallest 4,342 last April. For the last four months the average has been 6,804 tons, against 5,376 in the first six months of the year.

It should be borne in mind that the imports now are an extremely small fraction of the total consumption of the country, which is probably as much as 90,000 tons per month for maintenance alone; while the imports this year would have sufficed for only 676 miles of about 5,500 of new track that were laid during the ten months.

THE NORTHWESTERN GRAIN MOVEMENT seems to have revived instead of falling off on the near approach of the close of navigation, which might be ascribed to the early announcement of the advance of rail rates, were it not universally known that rates are always advanced before winter, so that the announcement can scarcely be said to have conveyed any other information than the date of the advance, which was late, and not early. But, whatever the cause, the receipts of grain at the Northwestern markets, which had been declining since September (as they almost always do, but less rapidly), increased materially in the week ending Nov. 17, when they were the largest for five weeks, and very much larger than in the corresponding week of any previous year—about a fourth larger than in 1880, when there were great crops of both wheat and corn to be marketed, and 40 per cent. more than last year.

For seven successive weeks of this year the receipts of all kinds of grain at the eight Northwestern markets have been, in thousands of bushels:

Week ending							
Oct. 6.	Oct. 13.	Oct. 20.	Oct. 27.	Nov. 3.	Nov. 10.	Nov. 17.	
8,016	7,302	6,250	6,257	6,020	5,942	6,448	

The fact that there is an increase of 506,000 bushels (8½ per cent.) over the previous week in the last week named is more noticeable, perhaps, than the absolute amount of the receipts, though the latter is unprecedented at this season.

The increase over previous weeks is very largely in wheat, which, considering the light crop, is coming forward rapidly to the Northwestern markets, though it seems slow to go further east. Indeed, the wheat receipts this year since harvest have not been small, but have been positively large, and compare quite well with those of the most productive years. Thus the total wheat crops of the United States for four years, and the Northwestern receipts of wheat during the 15 weeks from Aug. 5 to Nov. 17 in the same years have been:

	1880.	1881.	1882.	1881.
Crops.....	498,550,000	380,280,000	504,000,000	400,000,000
N. W. receipts.	41,047,041	19,779,129	38,497,435	36,942,522

We see that when the crops fell of 118 millions from 1880 to 1881 the Northwestern receipts for these fifteen weeks (when generally the wheat movement is heaviest) fell off more than half; but this year, notwithstanding a probable falling off of 104 millions from the crop of last year (this year's production is not quite determined yet) we have a decrease of only 4 per cent. in the receipts.

The cause doubtless is the unusually large surplus of last year's crop left on hand at harvest time this year, which will perhaps make the available surplus not much less than the quantity actually marketed last year.

The increase over the receipts of the previous week this year are nearly all at Chicago and Milwaukee, and Milwaukee's receipts are the largest it has had this season. The fact that the Toledo and St. Louis receipts are not particularly large indicates that the large arrivals of wheat are spring and not winter grain, which is further indicated by large wheat receipts at Duluth, which are all spring grain. The receipts there and at Milwaukee (the latter probably all spring wheat also) were 728,756 bushels. Those of Chicago, which are both winter and spring, 665,361, leaving for the other three markets, which receive winter wheat almost exclusively, 851,404 bushels. Last year the Northwest produced about 250 million bushels of winter wheat and about 115 millions of spring; but this year winter wheat is a very poor crop except in Kansas and Missouri; while spring wheat is a failure nowhere and exceptionally good in Iowa and Nebraska.

The large wheat movement we should expect to have left comparatively little to be forwarded from the winter wheat states which have poor crops this year—that is, all states this side of the Mississippi except Wisconsin; but there may still be very heavy shipments from the remainder of the wheat country, all of which except Kansas and Missouri ships by far the larger part of its grain by way of Chicago or Milwaukee. The Chicago roads, then, are likely to have an unusually large share of the wheat marketed for the rest of the season.

The Northwestern shipments were also larger in this week ending Nov. 17 than in any corresponding week of previous years, and the increase over the previous week is 16 per cent., which is extraordinary for the season, but due probably to the cause that the winds had brought a larger fleet to Chicago and Milwaukee, as the increase is wholly in lake shipments.

The receipts at Atlantic ports, however, continue exceptionally light—in the week in question less than in any corresponding week since 1873 at least.

THE CHICAGO-ST. LOUIS POOL, which was organized only about a year ago, divides the through traffic among the four roads competing for it, the Chicago & Alton, the Wabash, the Illinois Central (connecting with the Vandalia Line for St. Louis), and the Chicago, Burlington & Quincy. Some time ago the Chicago & Alton became dissatisfied with the operation of the pool and gave the requisite 30 days' notice that it would withdraw, but it afterward consented to remain until Jan. 1, when the agreement made last year was to expire. Meanwhile a meeting of the managers of the roads concerned was held in Chicago on Tuesday of last week, at which it was agreed to continue the arrangement through the year 1884, with the same division of traffic as at present, unless new percentages shall be fixed by arbitration. The freight percentages are reported to be: Chicago & Alton, 36; Wabash, 29; Illinois Central, 20; Burlington, 15.

CHICAGO LUMBER RECEIPTS have been very large since September, but they must be substantially at an end. From Oct. 1 to Nov. 22 they were:

	1883.	1882.	Decrease.	P. c.
M. ft.....	424,288	427,568	3,280	0.7

Thus they were very nearly as large as last year, when they were unprecedented and made the stock on hand at the close of the year very much larger than ever before. The stock on hand Nov. 1 for the last three years has been:

	1883.	1882.	1881.
M. ft.....	665,947	706,625	599,525

Thus this year it was only 40,705 M. less than last year and 66,422 M. (11 per cent.) more than in 1881.

The shipments are said to be very satisfactory and the dealers to be more confident of a good market than before this year.

THE SCRAP HEAP.

Another Pass Request Forger.

A person who represents himself to be the chief clerk of Mr. Wm. S. Mellen, General Freight Agent of the Chicago & Northwestern Railway, has in some way got possession of some of Mr. Mellen's letter-heads, and uses them in forging requests for passes on different railroads. He has passed at different times under the name of "R. Browning," "J. E. Wilson," "F. Browning," and "Lawrence," and has been at Cincinnati, Indianapolis, Buffalo and Richmond, Va., accompanied by a woman purporting to be his wife, for whom he has obtained passes with himself. Mr. Mellen is unable to identify him with anyone ever employed in his office, and whoever he may be, his requests are forgeries and he is evidently getting these passes for sale.

Baltimore & Ohio Employees Relief Association.

The October statement of the Baltimore & Ohio Employees Relief Association shows that during the month payments, varying in amount from \$1 to \$1,000, were made to 755 members. The detailed statement of those to whom payments were made is as follows: Transportation Department, Main Stem, 98; Machinery Department, 210; Road Department, 124; Pittsburgh Division, 42; Trans-Ohio divisions, 163; physician's bills, 118; total, 755. The payments for deaths numbered 10 in all.

Disciplining a Station Agent.

There were a dozen of us waiting at the station for the noon train. Every one had cut his dinner short to catch the train, but the hour arrived—five—ten—twenty minutes passed, and then everybody wondered what had happened. The ticket agent was also the telegraph operator. He was a young fellow of about 20, ill-grained and supercilious, but impatience overcame the fear of him, and a woman stepped to the window and asked:

"Is the train late?"

"Um!" he growled in reply.

"How late is it?"

"Um!"

That finished her, and she resumed her seat. Five minutes more slipped away, and a very solemn looking man carrying a very solemn looking carpet-bag, advanced from the corner and began:

"Train is late, isn't it?"

"Yes."

"How late is it?"

"Um!"

"What is the cause of it?"

No answer.

After the fifth one had been turned away a short, solid, grizzly-headed man who had been whittling a shingle on the platform and softly humming "We won't go home till morning," entered the waiting room, looked up at the clock, and then sauntered to the ticket window and queried:

"What's that train?"

The young man was looking over some freight bills, and he did not raise his head.

"What's—that—train?" shouted the passenger as he brought his fist down on the shelf.

No answer. After waiting ten seconds he walked out doors, turned to the right and suddenly entered the ticket office through the freight-house. Walking straight up to the agent he reached over the table and seized him, pulled him across like a streak of lightning, and as he gave him a shake and jammed him into a corner he called out:

"What in thunder and blazes is that ar' train?"

"It's a-comin'!" gasped the agent.

"When, where, which?"

"In about t—twenty minutes!"

"What made'er late?"

"The engine broke down at Winchester."

"Then why in Crockett's name didn't you say so in the first place? Young man, take a squar' look at me! I ain't purty nor genteel nor saintly, but I'm plumb up and down and mean business! When a man asks me how hogs ar' selling I'm going to gin him a civil answer if it cracks three ribs, and when I ask you why that dog-goned old bulgine hasn't snorted in you've got to hear me or down comes your trestle-works! Do you catch on?"

"Y—yes—certainly—train's behind time—be here soon—of course!"—*Detroit Free Press.*

Small Lots of Steel Rails.

In these dull times, when there is such general complaint of a dearth of business, it is very singular indeed to read in a Harrisburg paper that the Pennsylvania Steel Co. has such a demand for its rails "that they are shipped away before they have time to cool." If this is so, it is to be explained on the ground that at this time of the year rail mills usually have an abundance of small orders for rails, for quick delivery,

to be used in making repairs that cannot be postponed. Mills having large contracts on hand take such orders at a dollar or two over the usual rates, and run out the rails when they are finishing up a sizeable contract for a similar section. The rails to fill the little order must then be shipped without delay.—*Iron Age.*

General Railroad News

MEETINGS AND ANNOUNCEMENTS.

Meetings.

Meetings will be held as follows:
Brunswick & Western, annual meeting, at the office in Brunswick, Ga., Dec. 4, at noon.
Fort Worth & Denver City, annual meeting, in Fort Worth, Tex., Dec. 11.
New York, Providence & Boston, annual meeting, at the office in Providence, R. I., at 10 a. m. on Dec. 12.
Richmond & Danville, annual meeting, at the office in Richmond, Va., Dec. 12, at noon. Transfer books close Dec. 4.
Richmond & West Point Terminal Co., annual meeting, at the office in Richmond, Va., Dec. 11, at noon.

Dividends.

Dividends have been declared as follows:
Chicago & Northwestern, 2 per cent., quarterly, on preferred, and 3½ per cent., semi-annual, on common stock, both payable Dec. 27. Transfer books close Dec. 6.
Delaware & Hudson Canal Co., 1½ per cent., quarterly, payable Dec. 10. Transfer books closed Nov. 24.
Lehigh Coal & Navigation Co., 3 per cent., semi-annual, payable Dec. 11, to stockholders of record Nov. 30. The May dividend was 2½ per cent.
Philadelphia, Wilmington & Baltimore, 4 per cent., semi-annual, payable Jan. 2.
Union Pacific, 1½ per cent., quarterly, payable Jan. 1. The transfer books close Dec. 5.
Worcester & Nashua, 1½ per cent., payable Jan. 1; *Nashua & Rochester* (leased to Worcester & Nashua), 0½ per cent., payable Jan. 1. These dividends are paid to equalize the dividends on both stocks up to Dec. 1, at which date the two companies are to be consolidated.

ELECTIONS AND APPOINTMENTS.

Atchison, Topeka & Santa Fe.—The following order is dated Topeka, Kan., Nov. 20:

"W. W. Borst, Superintendent of the Western Division, has resigned. D. H. Rhodes is appointed Superintendent of the Western Division with headquarters at La Junta, Colorado. This appointment is in effect on and after Nov. 25, 1883."

The Western Division extends from Dodge City, Kan., to Pueblo and Rockvale, Col., and south to Raton, N. M., including 410 miles of road in all.

Baltimore & Ohio.—At the adjourned annual meeting in Baltimore, Nov. 26, the following directors were chosen: Wm. F. Burns, Robert Garrett, John Spear Nicholas, John Gregg, Wm. W. Taylor, James Carey Coale, G. A. von Lingen, Decatur H. Miller, Joshua G. Harvey, George W. Dobbin, Henry C. Smith, Aubrey Pearre.

Boston & Providence.—The new board has re-elected Henry A. Whitney President; A. A. Folsom, Superintendent; B. B. Torrey, Treasurer; Winslow Warren, Clerk.

Brunswick & Western.—The following circular from General Manager H. G. Morse is dated Brunswick, Ga., Nov. 20:

"Mr. W. R. Kline has this day been appointed Master Mechanic of the Brunswick & Western Railroad, vice Mr. Wm. McCandless, resigned."

Cherry Grove & Hickory Valley.—Mr. R. Freeman, of Warren, Pa., is President of this new company.

Chicago, Burlington & Quincy.—Mr. George Alexander, Superintendent of the Chicago Division, has issued the following notice: "Mr. J. M. Rodman has been appointed Acting Train-Master at Chicago, appointment to take effect Nov. 22. Mr. Rodman will have charge of the distribution of cars and of the switching service at Chicago. Freight train men will be subject to his authority while east of the C. C. & I. C. crossing."

Denver & Rio Grande.—Mr. W. W. Borst has been appointed Superintendent of the First Division in place of W. H. Bancroft, transferred to the Utah Division. Mr. Borst was formerly on this road, but for some time past has been on the Atchison, Topeka & Santa Fe.

Macon & Florida.—The directors of this new company are: A. O. Bacon, S. T. Coleman, S. S. Dunlap, S. R. Jaques, H. J. Lamsar, A. J. Lane, M. Nussbaum, R. H. Plant, Virgil Powers, Wm. H. Ross, J. S. Schofield, George B. Turpin, L. N. Whittle. Office in Macon, Georgia.

Michigan & Ohio.—Mr. Luther Allen has been appointed Superintendent of this new road, with office in Toledo, O. D. J. Durrell has been appointed Master Mechanic, with office in Marshall, Michigan.

Mobile & Montgomery.—At the annual meeting in Montgomery, Ala., last week, the following were chosen: President, Josiah Morris; Vice-President, A. C. Dana; Directors, M. S. Belknap, Thomas G. Jones, A. M. Quarrier, H. M. Smith, Theodore Welch, J. F. Whitfield; Secretary, George W. Craik. The road is owned by the Louisville & Nashville.

Nebraska City, Beatrice & Salina.—The officers of this new company are: President, Julian Metcalf, Nebraska City, Neb.; Vice-President and General Manager, George V. Morford, Omaha, Neb.; Secretary and Treasurer, C. G. Dorsey, Beatrice, Nebraska.

New York, Lake Erie & Western.—At the annual meeting in New York, Nov. 27, the following directors were chosen: Theron R. Butler, Charles Dana, F. N. Drake, Harrison Durkee, Thomas Dickinson, James D. Fish, R. Suydam Grant, James J. Goodwin, Solomon S. Guthrie, Hugh J. Jewett, John Taylor Johnston, Cortland Parker, John Frederick Pierson, Homer Ramsdell, Jacob H. Schiff, Wm. L. Strong, J. Lowber Welsh. The only new director is Mr. Fish, who takes the place of Hon. E. D. Morgan, deceased.

New York, Lake Erie & Western Leased Lines.—At meetings held in New York, Nov. 27, directors were chosen as below for the following companies, whose lines are leased to the New York, Lake Erie & Western Co.: *Erie International*.—Hugh J. Jewett, Robt. Harris, Theron R. Butler, Edmund S. Bowen, Augustus R. Macdonough, Chas. G. Barber, Bird W. Spencer. *Suspension Bridge & Erie Junction*.—Hugh J. Jewett, Solomon S. Guthrie, George R. Blanchard, Robt. Harris, John A. Hardenbergh, Augustus R. Macdonough, Bird W. Spencer, Richard G. Taylor, John N. Abbott, Chas. G. Barber, Edson D. Hammond, Royal C. Vilas, Oliver W. Cook.

Ogdenburg & Lake Champlain.—Mr. E. B. Burnham has been appointed Purchasing Agent, with office in Ogdenburg, N. Y. He was formerly on the Boston, Hoosac Tunnel & Western road.

Old Colony.—At the annual meeting in Boston, Nov. 27, the old board was re-elected, as follows: Frederic L. Ames, Thomas J. Border, John S. Brayton, Charles F. Choate, Samuel C. Cobb, Uriel Crocker, Thomas Dunn, Francis B. Hayes, Charles L. Lovering, Wm. J. Rotch, John J. Russell, Nathaniel Thayer, Royal W. Turner. The board re-elected Charles F. Choate President; Frederic L. Ames, Vice-President.

Mr. J. N. Lauder has been appointed Superintendent of Motive Power, a new office on this road. He was formerly Master Mechanic of the Northern (New Hampshire) road, and later of the Boston, Lowell & Concord line, but for a year past has been on the Mexican Central road. Mr. Lauder is a master mechanic of ability and high standing, and his many friends in the Master Mechanics' Association, of which he was formerly President, will be pleased to hear of his new appointment.

Petersburg.—At the annual meeting in Petersburg, Va., Nov. 21, the following were chosen: President, E. T. D. Myers; Directors, Joseph Bryan, James H. Dooley, T. M. Logan, W. H. Palmer, Frederick R. Scott.

Pittsburgh & Western.—The following circular has been issued:

"At a meeting of the board of directors of this company, held Nov. 6, Mr. Thomas M. King was elected Vice-President and General Manager of the company, to take effect forthwith. Mr. King will assume personal charge of the management of the company on Monday, Nov. 19, 1883, and will be obeyed and respected accordingly."

Mr. King is General Superintendent of the Pittsburgh Division of the Baltimore & Ohio, and it is understood that he will retain that position also.

Providence, Warren & Bristol.—At the annual meeting in Providence, R. I., Nov. 26, the following were elected: President, Harry A. Whitney; Directors, T. P. I. Goddard, Wm. Goddard, Wm. R. Robeson, Royal C. Taft, Francis M. Weld. The road is controlled by the Boston & Providence Company.

Richmond & Petersburg.—At the annual meeting in Richmond, Va., Nov. 27, the following were chosen: President, Frederick R. Scott; Directors, H. K. Ellyson, B. W. Haxall, D. W. Lassiter, R. R. Bridgers and W. T. Walters.

Texas & Great Northwestern.—The officers of this new company are: President, H. A. Blood, Fitchburg, Mass.; Vice-President, Thomas J. Hurley, New York; Treasurer, W. E. Hughes, St. Louis; Assistant Treasurer, Edward D. Hewing, Fitchburg, Mass.; Secretary, James T. Vanster, Dallas, Texas.

Texas & St. Louis.—Mr. W. R. Woodard has been appointed General Manager in place of George W. Ristine, resigned, as has been previously reported. He has been for some time Superintendent of the Hannibal & St. Joseph road.

Utah Eastern.—At the annual meeting in Salt Lake, Utah, Nov. 19, the following directors were chosen: T. J. Almy, F. L. Ames, R. S. Chambers, S. H. H. Clark, E. Dickinson, Sidney Dillon, W. W. Ritter, C. S. Wurtele. The board re-elected Sidney Dillon President; E. Dickinson, Vice-President and General Manager; T. S. McMurry, Secretary and Treasurer.

PERSONAL.

—Mr. J. M. Williams has resigned his position as Superintendent of the Texas Trunk road.

—Mr. George W. Reynolds has resigned his position as Master Mechanic of the Northern Division of the Old Colony Railroad.

—Mr. John T. Gerry has resigned his office as Superintendent and Chief Engineer of the Burlington & Northwestern roads, to accept a position on the Texas & St. Louis road.

—It is said that the position of President of the New York & New England Railroad Co. has been offered to Mr. C. W. Rogers, General Manager of the St. Louis & San Francisco road.

—Mr. J. K. Taylor has resigned his position as Master Mechanic of the Old Colony Railroad, to take effect Dec. 1, and the office is abolished, or rather merged in a new one, from that date.

—Mr. John F. Bodine, President of the Williamstown Railroad Co., died at his residence in Williamstown, N. J., Nov. 23, aged 62 years. He was a large glass manufacturer, and had served with credit in both branches of the New Jersey Legislature.

—Mr. James Sedgley has resigned his position as General Master Mechanic of the Lake Shore & Michigan road, to take effect Jan. 1 next. Mr. Sedgley intends to retire from active work altogether, and to enjoy the leisure which he has earned by 40 years of hard work. He has held his present position for a number of years.

—Mr. Charles E. Gorham died in Cleveland, O., Nov. 14, aged 70 years. When a young man he began work on a railroad in Connecticut, and soon after the Cleveland & Pittsburgh road was opened he came to it as a freight conductor. Rising through various grades, in 1862 he was appointed Superintendent of the Western Division of the Pittsburgh, Fort Wayne & Chicago, and some years later was made Assistant General Manager. Some two years ago he retired from that position and was made General Agent of the Pennsylvania Company at Cleveland.

TRAFFIC AND EARNINGS.

Grain Movement.

For the week ending Nov. 17 receipts and shipments of grain of all kinds at the eight reporting Northwestern markets and receipts at the seven Atlantic ports have been, in bushels, for the past ten years:

Northwestern shipments.				
Year.	Receipts.	Total.	By rail.	P. c.
1874.	2,222,349	1,042,623	278,369	26.7
1875.	3,276,429	2,378,015	876,901	36.9
1876.	2,855,645	2,679,740	1,272,753	47.5
1877.	3,024,676	2,717,945	461,569	17.0
1878.	4,210,803	2,782,672	689,159	24.8
1879.	3,540,174	3,476,933	594,979	17.1
1880.	3,226,346	4,327,795	2,287,295	46.4
1881.	3,733,438	2,845,731	2,048,138	70.6
1882.	4,557,743	3,826,950	2,106,624	55.1
1883.	6,448,483	4,934,604	2,371,186	48.1

Both the receipts and the shipments of the Northwestern markets were thus larger than in the corresponding week of

any previous years, and the receipts were 8 1/2 per cent. and the shipments 16 per cent. more than the previous week of this year, an increase very unusual at this season, when the whole movement is likely to decline. The rail shipments were also exceptionally large. The Atlantic receipts, however, were smaller than in the corresponding week of any year of the ten, and but half as large as in 1880, but were a little larger than the week before. Chicago and Milwaukee together had 62 per cent. of the total Northwestern receipts; New York and Boston 70 per cent. of the Atlantic receipts. Boston's receipts are the largest it had since June, 1881, and exceeded the aggregate receipts at Philadelphia and Baltimore, which were but 18 per cent. of the whole.

Exports from Atlantic ports for the week ending Nov. 17 for four successive years have been:

	1880.	1881.	1882.	1883.
Flour, bbls.	100,790	105,303	220,531	154,917
Grain, bush.	4,112,473	2,219,024	1,171,307	1,444,840

Including flour, the exports this year were a fifth and more less than in 1882 and 1881, and not one-half those of 1880.

Railroad Earnings.

Earnings for various periods are reported as follows:

Ten months ending Oct. 31:				
	1883.	1882.	Inc. or Dec.	P. c.
Eastern	\$3,079,967	\$2,896,828	I.	183.1
Nash., Ch. & St. L.	1,913,234	1,740,513	I.	163.7
Net earnings	872,741	745,013	I.	172.7
Norfolk & West.	2,308,746	1,943,747	I.	364,999
Net earnings	1,086,492	877,621	I.	210,871
Northern Central	5,142,885	4,747,487	I.	359,398
Net earnings	2,071,438	1,780,934	I.	290,504
Pennsylvania	42,769,257	40,548,834	I.	2,220,423
Net earnings	16,295,698	15,645,214	I.	650,484
South Carolina	1,073,280	1,013,055	I.	60,225
Vicks. & Meri.	404,766	354,858	I.	49,948
Eight months ending Aug. 31:				
C. Col. & Ind.	\$2,813,418	\$2,730,245	I.	\$83,173
Net earnings	830,861	770,642	I.	60,219
Three months, July 1-Sept. 30:				
Chi. & Gd. Trunk	\$151,879	\$110,406	I.	\$41,473
Net earnings	35,052	23,044	I.	11,408
D. Gd. H. & Mil.	73,399	70,706	I.	2,693
Net earnings	24,745	20,957	I.	3,788
Grand Trunk	924,567	886,183	I.	38,384
Net earnings	291,497	265,566	I.	25,931
Month of July:				
East Tenn. & Va.	\$311,784	\$243,545	I.	\$68,239
Net earnings	137,345	82,233	I.	55,112
St. Johns & L. C.	26,187	24,679	I.	1,508
Month of August:				
E. T. Va. & Ga.	\$362,565	\$280,287	I.	\$73,278
Net earnings	178,408	114,022	I.	64,026
La. & Mo. River	70,300	65,400	I.	4,900
Month of September:				
E. T. Va. & Ga.	\$394,434	\$320,358	I.	\$74,076
Net earnings	204,982	125,683	I.	79,319
Oregon Imp. Co.	382,242	330,307	I.	51,935
Month of October:				
E. T. Va. & Ga.	\$455,593	\$366,216	I.	\$89,377
Net earnings	236,476	182,022	I.	54,454
Eastern	339,178	322,701	I.	16,477
N. C. & St. L.	201,320	201,712	D.	392
Net earnings	92,084	91,379	I.	705
N. O. & N. E.	12,760			
Norfolk & West.	331,854	273,318	I.	58,536
Net earnings	159,951	132,629	I.	27,322
Northern Central	590,748	527,714	I.	63,034
Net earnings	286,267	185,638	I.	100,649
Pennsylvania	4,875,347	4,060,053	I.	815,294
Net earnings	2,216,150	2,037,712	I.	178,438
South Carolina	146,294	105,087	D.	18,793
Vicks. & Meri.	65,102	50,907	I.	14,295
Two weeks in November:				
Ches. & Ohio	\$156,104	\$139,770	I.	\$16,334
E. L. & B. S.	229,395	22,945	I.	6,452
East T. V. & Ga.	184,080	155,055	I.	29,025
Mem. & Charles	82,624	69,871	I.	12,753
Second week in November:				
Chi. & Gd. Trunk	\$59,274	\$58,481	I.	\$793
Ch. & West Mich.	30,164	28,608	I.	1,556
Det. Lan. & No.	30,474	30,746	D.	272
Flint & Pere Mar.	55,100	45,100	I.	10,000
Gd. Trunk	385,227	375,369	I.	9,858
G. R. W. & St. P.	10,700	10,006	I.	694
Ill. Central	361,535	315,727	I.	45,808
Mar. H. & O.	17,545	28,128	D.	10,583
Third week in November:				
Canadian Pacific	\$124,000	\$69,000	I.	\$55,000
Chi. & Alton	206,596	200,979	I.	5,617
C. M. & St. P.	547,000	476,268	I.	70,732
Ch. & Northwest	503,000	450,000	I.	53,000
C. St. P. & M. & O.	130,000	123,700	I.	6,300
Denver & R. G.	153,200	115,200	I.	38,000
M. L. S. & West.	22,920	18,801	I.	4,119
Northern Pacific	326,900	194,300	I.	132,600
Or. R. & Nav. Co.	128,916	85,182	I.	43,734
Rochester & Pitts.	18,450	7,896	I.	10,554
St. L. & San F.	90,600	75,600	I.	15,000
St. P. & M. & M.	206,390	188,300	I.	18,090

Weekly earnings are usually estimated in part, and are subject to correction by later statements.

Coal.

Coal tonnages for the week ending Nov. 17 are reported as follows:

	1883.	1882.	Inc. or Dec.	P. c.
Anthracite	760,436	698,147	I.	2,289
Semi-bituminous	122,962	132,417	D.	9,455
Bituminous, Penna.	79,955	71,977	I.	7,978
Coke, Penna.	64,784	67,127	D.	2,343

Anthracite stocks are reported as increasing, while no stoppage of production appears probable at present. The very short duration of the recent cold snap and the continuance of very mild weather naturally has a discouraging influence on the domestic demand, while that for steam purposes and the manufacture of iron is not very heavy. The Cumberland and Clearfield coal operators claim that their coals are now being used for steam purposes in many places where heretofore anthracite has always been the fuel.

The coal tonnage of the Pennsylvania Railroad for the week ending Nov. 17 was:

	Coal.	Coke.	Total.
Line of road	167,992	54,915	222,907
From other lines	48,343	9,869	58,202
Total	216,335	64,784	281,109

The total tonnage this year, to Nov. 17, was 10,761,382 tons, against 9,739,505 tons to the corresponding date last year; an increase this year of 1,021,877 tons, or 10.5 per cent.

The coal tonnage of the Baltimore & Ohio Railroad for the fiscal year ending Sept. 30 was as follows, coke being included with the coal:

	1882-83.	1881-82.	Inc. or Dec.	P. c.
Main Stem	2,581,557	2,521,226	I.	60,331
Pittsburgh Divis.	2,402,130	2,447,749	D.	45,619
Trans-Ohio line	684,660	678,041	I.	6,655
Total	5,668,347	5,647,016	I.	21,307

The coal carried over the Main Stem was distributed as

follows: delivered in Baltimore, 1,654,821; delivered to local and western points, 517,041; for use of company, 409,695; total, 2,581,557 tons.

As compared with 1880-81 the total increase last year was 1,128,756 tons; as compared with 1879-80, it was 1,279,527 tons.

The coal tonnage of the Chesapeake & Ohio Railroad for the ten months ending Oct. 31 was:

	1883.	1882.	Increase.	P. c.
Coal	741,387	714,186	27,201	3.8
Coke	86,837	76,135	10,702	14.1
Total	828,224	790,321	37,923	4.8

For the month of October the tonnage was: Coal, 71,038; coke, 9,023; total, 80,061 tons.

Cumberland coal shipments for the week ending Nov. 24 were 55,529 tons. The total shipments this year to Nov. 24 were 2,282,793 tons.

Petroleum.

The production of the Pennsylvania and New York oil wells for October is given as follows by Stowell's *Petroleum Reporter*, in barrels of 42 gallons:

	1883.	1882.	Inc. or Dec.	P. c.
Production	2,076,659	2,297,658	D.	220,999
Shipments	2,215,421	2,089,428	I.	125,993
Stock	35,612,515	32,008,533	I.	3,604,982
Producing wells	19,100	19,000	I.	100

The production is the largest reported for any month of this year, but was exceeded in every month of last year except December, and in every month of 1881 except in January.

The shipments were less than in September by 120,153 barrels, or 5.1 per cent., but with the exception of that month and of July, 1882, they are the largest reported in any month for 12 years. For the fifth time this year the shipments for the month exceed the production.

The stock reported at the close of the month was all in the pipe lines. It was diminished during the month by 139,762 barrels, which is the excess of shipments over production.

The large increase over September in the number of wells reported is due to a careful account of the small wells. There were 321 new wells completed during the month and 21 dry holes reported. At the close of the month there were 341 new wells in process of drilling.

Of the total production the Allegheny District in New York contributed 17.2 per cent.; the Bradford District in Pennsylvania, 56.1; the Warren District, 15.0, and the Lower District 11.7 per cent.

Of the shipment from the wells 465,846 barrels, or 21 per cent., are reported as by rail, and 1,749,575 barrels, or 79 per cent., by pipe line.

New developments made continue to prove that the new Forest County wells, while for a time large producers, are unreliable, and rapidly give out.

Shipments out of the regions were as follows:

	Barrels.	Per ct. of total.
New York	906,606	40.9
Philadelphia	184,731	8.3
Baltimore	85,124	3.8
Boston	16,100	0.7
Cleveland	512,951	23.2
Pittsburgh	43,807	2.0
Local points	253,545	11.5
Refined at Creek refineries	212,567	9.6
Total	2,215,421	100.0

Shipments of oil refined at Creek refineries (reduced to its equivalent in crude) were: New York, 80,614; Philadelphia, 11,785; Baltimore, 11,084; Boston, 67,650; local points, 41,434; total, 212,567 barrels.

South Carolina Railroads.

The Charleston News and Courier gives an abstract of the earnings of railroads in South Carolina for the year ending June 30, 1883, as reported to the Railroad Commission. The following exhibits for the same periods the total income from all sources, and the total operating expenses, including taxes paid:

	Income.		Expenses.	
	1882-83.	1881-82.	1882-83.	1881-82.
Ash. & Spart'burg.	\$39,460	\$39,721	\$40,737	\$39,050
Ashley River	6,419	7,875	925	1,034
Atlanta & Charlotte & ...	499,799	519,153	333,078	343,648
Augusta & Knox	97,228	23,433	61,591	24,757
Barnwell	4,274		4,163	
Central. of S. C	94,034	20,552	56,276	11,277
Charleston & Savannah.	390,667	343,785	392,545	411,111
Ches. Col. & Aug.	602,061	590,935	437,578	404,168
Cherw. & Darlington.	31,580	41,968	22,839	24,216
Cheraw & Salisbury	80,897	73,016	55,033	47,013
Ches. & Len'rs	24,036	19,951	9,077	8,322
Col. & Greenville	35,773	49,115	28,829	31,147
Laurens	628,061	608,594	426,737	434,600
Northeastern	39,336	40,416	31,416	31,600
Port Royal & Aug.	618,440	551,706	512,831	610,000
South Carolina	307,100	320,234	272,112	280,200
Sparsanburg. U. & Col.	1,356,936	1,229,876	835,434	793,210
Wil., Col. & Aug.	107,677	100,165	91,067	81,800
	722,986	705,500	571,780	648,448
Total.	\$5,832,281	\$5,287,683	\$4,191,467	\$4,204,488

Minimum Charges and Uniform Rates.

M. S. Frink, Manager of the St. Louis Freight Bureau, has issued a circular letter to Western railroad officials in which he invites their attention to the great diversity in the instructions concerning the charges on small shipments as expressed in the tariffs of the various roads under the head of "minimum charges." Shippers, Mr. Frink says, now expect to be told what it will cost to carry freight through to destination, whether in large or small quantities, and custom has made it necessary to do so. Mr. Frink is of the opinion that a slight modification of the rule adopted by the Southwestern Railway Association would make it a proper one on all lines, both for local and through traffic, and its adoption would prevent much annoyance and work well for all. The following is suggested: "No shipment, however small, will be carried any distance for less than 25 cents. In cars where second-class rate for 100 pounds exceeds 25 cents that rate will be the minimum charge. Powder (explosive) of all kinds must be carried separately, and will not be taken as a part of a shipment whether there be other goods from same shipper to same consignee the same day or not."

This, Mr. Frink adds, may seem a small matter, but experience has proved that small transactions make most of the trouble between the carrier and the public.

Transcontinental Association Baggage Rules.

Commissioner Geo. W. Ristine, of the Transcontinental Association, has sent the following to all connections: "Notice is hereby given that no baggage must be checked over the lines in this association on tickets to points beyond Helena, Ogden, Albuquerque, Deming, or El Paso. Such baggage must be checked only to, and rechecked at, our Eastern terminals, including St. Louis, Hannibal, Cairo, Columbus and Little Rock, for the Texas & Pacific Railway. Free allowance of baggage will be as follows: Each full or whole ticket, 150 pounds; theatrical tickets, 200 pounds; transpacific tickets, 250 pounds. Children's (one-half) tickets, one-half of above, respectively, which, as above stated, must be checked by ourselves only."

Cotton.

Cotton movement for the week ending Nov. 23 is reported as follows, in bales:

	Interior markets.	Receipts.	Shipments.	Receipts.	Exports.
1883	139,841	1-4-022	222,510	69,840	
1882	102,669	147,647	242,169	139,731	

The total receipts at seaports for the cotton year (from Sept. 1) to Nov. 23 were 2,199,099 bales, an increase of 0.4 per cent. The stock reported Nov. 23 was 931,806 bales.

The total receipts at interior markets from Sept. 1 to Nov. 23 were 1,393,541 bales, a decrease of 2.7 per cent. from last year. The stock reported on hand Nov. 23 was 359,748 bales.

OLD AND NEW ROADS.

Atchison, Topeka & Santa Fe.—Mr. J. F. Goddard, Traffic Manager of this road, has issued the following instructions to all agents:

"On and after Dec. 1, 1883, that part of our line known as the Pleasant Hill Branch, between Cedar Junction and Pleasant Hill, will be operated as a part of the Southern Kansas Railroad, formerly the Kansas City, Lawrence & Southern Kansas Railroad. All rates and tariffs between points east of Cedar Junction to and including Pleasant Hill are hereby abrogated. All business for points east of Pleasant Hill that has heretofore been sent via that station will hereafter be sent via Argentine Transfer or Emporia Junction. Agents east of Cedar Junction, on the Pleasant Hill Branch, will report to S. B. Hynes, General Freight Agent, Lawrence, Kan., on and after Dec. 1, 1883."

Attica, Lockport & Youngstown.—The subscriptions to the stock of this company have reached an amount sufficient to secure the organization, and it will soon be incorporated. The road is to run from Attica, N. Y., to Youngstown, on Lake Ontario.

Bedford, Springville, Owensboro & Bloomfield.—This company has been offered the right of way provided it will extend its road from Bloomfield, Ind., northward about 8 miles to a connection with the Terre Haute & South-eastern road at Worthington.

Bellingham Bay & British Columbia.—Grading is in progress on this road from New Whatcom, Wash. Terr., on Bellingham Bay, northward, and work is to be continued through the winter as far as the weather permits. The road is intended to run northward into British Columbia, to a connection with the Canada Pacific road.

Boston, Hoosac Tunnel & Western.—This company has begun to run regular trains over the extension of its road from Mechanicsville, N. Y., to Rotterdam Junction, where connection is made with the New York, West Shore & Buffalo road.

Buffalo, New York & Philadelphia.—It is again reported that this company is making arrangements for a western connection. This is to be secured by a connection with the Cleveland, Youngstown & Pittsburgh road, now nearly completed from Akron, O., east to the Pennsylvania line, and by the building of a new road from Akron west to Chicago Junction on the Baltimore & Ohio, about 65 miles. This would complete a line from Buffalo to Chicago, in connection with the Baltimore & Ohio.

Canadian Pacific.—A cable dispatch from London to the Toronto Globe says: "It is officially announced that the agreement between the Canadian Pacific Railway Co. and the Canada Northwest Land Co. has been modified by mutual consent. The original agreement was that the Canada Northwest Land Co. should purchase, at a rate agreed upon, 5,000,000 acres of the Canadian Pacific lands. The Land Co. has already acquired 1,500,000 acres, and the change made is that the Land Co. instead of having to purchase 3,500,000 other acres, is to be released from its liability in respect of 2,500,000 acres, and is to be bound to purchase only 1,000,000 acres in addition to that already acquired. The Land Co. is also to have the option to complete the purchase of the original quantity within two years from the present date. It is understood that the first purchase will be completed without any further call on the shares."

Cape Fear & Yadkin Valley.—The track on the extension of this road to Greensboro, N. C., is now laid to a point 16½ miles beyond the old terminus at Gulf, and work is progressing steadily. On the extension from Fayetteville southwest toward Shoe Heel, on the other end of the road, the track is laid for two miles, and work is also going on there. In addition to the tracklaying, work is being pushed on additions to the station houses and shops of the road, and the present intention is to complete the road as soon as possible.

The company recently bought two 16-in. cylinder engines from the Cooke Locomotive Works, at Paterson, N. J., and two 18-in. cylinder locomotives are expected to arrive this month. The company has also lately received 20 box, 4 stock and 20 flat cars from the Tredegar Co. at Richmond.

Central Iowa.—The Boston Herald reports: "President I. M. Cate of the Central Iowa road has resigned, and insists upon the acceptance, which will probably be accorded him, judging from a letter written by him to Director Russell Sage, in which very plain and forcible English is used. The text of the letter is not at hand, but one who has seen it says Mr. Cate's chief grievance was the settlement made by a prominent Boston party for Alfred Sully, the contractor for building the Eastern Division, so called, in which it is alleged that \$180,000 was given to the contractor that ought not to have been. Mr. Sully is likewise a director of the road. The settlement was made, President Cate says, in opposition to his verbal and written statements, and was so repugnant to his judgment that he could no longer serve as chief executive. It was originally agreed that the Eastern Division should be completed Aug. 31, 1883, and that the contractor should pay the interest on the bonds to Dec. 31, 1882, and for a certain consideration, for a year longer. It appears that he has in some way been relieved of this, and that the company has to pay the coupons, diverting therefore money which might otherwise have gone to the holders of the coupon debt, etc., of the old road. If what the President alleges is true, there would seem to be a chance for an investigation in the Iowa courts."

Central, of New Jersey.—Arguments have been in progress this week before the United States Circuit Court in Trenton, N. J., in the Dinmore suit to enjoin the lease of the road to the Philadelphia & Reading Co. This suit has attracted general attention from the great interests involved, and from the number of noted men who are engaged in it as counsel. Nothing, however, has really been brought out in the progress of the suit which was not well known before.

Cherry Grove & Hickory Valley.—This company has been organized to build a narrow-gauge road from Garfield in Warren County, Pa., to West Hickory in Forest County, a distance of 20 miles.

Chicago, Milwaukee & St. Paul.—It is said that this company will begin work on the extension of its line from Aberdeen, Dak., to the Black Hills. The new road will run nearly due west from Aberdeen, following generally the line of the Cheyenne River.

Chicago & Northwestern.—The Freeport & Mississippi Co. has been organized, all the incorporators being officers of this company, to build a line from Freeport, Ill., to Galena, about 38 miles. Surveys have already been made for the line, which will connect the company's road running from Galena north into Wisconsin with its other lines at Freeport.

Chicago, Rock Island & Pacific.—The following statement has been published for the six months of the fiscal year from April 1 to Oct. 31:

Gross earnings	\$6,058,194
Expenses (58.8 per cent.)	3,440,011
Net earnings	\$2,618,183
Receipts from Land Department	270,000
Total income	\$2,888,183
Interest and rentals	718,123
Surplus for dividends	\$2,170,000

The land income and fixed charges are partly estimated. The surplus shows an increase of \$220,000, or 11.3 per cent., over the corresponding period of last year.

Cincinnati, Walnut Hills & Suburban.—This projected line is to run from the Cincinnati Northern, at Oak street in Cincinnati, northeast to Madisonville. It is to be a light road, for suburban passenger travel only, and is intended to develop the property along the line.

Cleveland, Columbus, Cincinnati & Indianapolis.—The following statement for the eight months ending Aug. 31 is published in London:

	1883.	1882.	Inc. or Dec.	P. c.
Earnings	\$2,313,418	\$2,730,245	I.	\$-3,173 3.0
Expenses	1,982,557	1,959,603	I.	22,954 1.2
Net earnings	\$830,861	\$770,642	I.	\$60,219 7.8
Interest, etc.	431,831	421,278	I.	10,553 2.5
Surplus	\$399,030	\$349,364	I.	\$49,666 14.2
Per cent. of exps.	70.5	71.8	D.	1.3

Expenditures for additions to property this year have been \$269,411, leaving a balance of \$129,619. The similar expenses last year were \$211,350, and the balance remaining was \$138,014 at the end of August.

Cleveland, Youngstown & Pittsburgh.—The extension of this road is now completed to Bergholz, O., formerly known as Nebo, 36 miles south by east from the old terminus at Alliance, and 61 miles from the junction with the New York, Pennsylvania & Ohio road at Phalanx. The line is located 23 miles further, to Steubenville.

Connecticut Central.—At the annual meeting in Hartford last week the statement presented showed gross earnings for the year ending Sept. 30, of \$98,409; operating expenses, \$105,076, or \$6,667 in excess of earnings. The fixed charges, including taxes, interest, insurance and track rental, amount to \$19,495, so that the total expenses in excess of earnings are \$26,162. The Committee appointed at the last meeting to examine the accounts of the company at the office of the New York & New England in Boston reported that the operating of the roads known as the Springfield Division, for three years previous to May 30, 1883, shows a loss of \$37,351, or over \$12,400 year, and that the same roads for two years and eight months previous to the lease, yielded an average net income of \$11,625 per year. Under the lease, the report says, the earnings in the past three years have increased 7 per cent., and the operating expenses 70 per cent. The report of the Committee was referred to the board of directors, who were instructed to consider the expediency of cancelling the lease to the New York & New England road, and to report at a future meeting.

The New York & New England Co., which leases the road, owns a large part of the bonds, on which no interest has been paid for several years, and it is in its power to foreclose if it should seem best.

Delaware, Lackawanna & Western.—This company, it is said, is having surveys made for a branch or cut-off from the main line at Nicholson, Pa., 22 miles north of Scranton, northwest to Nichols on the Buffalo Division. The distance is about 45 miles, and the cut-off would save about 15 miles over the present line.

Detroit, Bay City & Alpena.—Track on this road is now laid to Au Sable, Mich., 14 miles northeast from the late terminus at Bristol, and work will be stopped there for the season. The road is now all completed from the junction with the Michigan Central at Wells Station to Au Sable, 50 miles, except the high bridge over Rifle River, four miles from Wells. Work on this bridge is in progress, and arrangements are being made for a temporary transfer there until the bridge is done. The road is of 3 ft. 2 in.

gauge, but is so built that a change to standard gauge can easily be made.

Duluth & Iron Range.—This company reports track laid on its road from Agate Bay, Minn., on the north shore of Lake Superior, northward 15 miles. Grading is progressing on another section of 15 miles, and it is intended to push the work as fast as possible during the winter, with the expectation of completing the road to the Vermillion iron range in the spring.

East Tennessee, Virginia & Georgia.—The following statement is made for October and the four months of the fiscal year from July 1 to Oct. 31:

	October.	Four Months.
	1883.	1882.
Earnings	\$455,593	\$386,216
Expenses	219,117	204,194
Net earnings	\$236,476	\$182,022
Per cent. of ex.	48.1	52.9

For the four months this shows an increase of \$284,970, or 23.0 per cent. in gross earnings, with an increase of \$32,059, or 4.4 per cent. in working expenses; the result being a gain in net earnings of \$252,911, or 50.2 per cent.

Fargo & Southern.—The following circular has been issued by General Manager W. A. Kindred:

"The Fargo & Southern Railway is open for business to Wild Rice station. Freight and passenger rates will be announced in a few days. Shipments should be made via Fargo."

Hartford & Connecticut Western.—There has recently been much talk of a revival of the old project for a railroad from Tariffville to Springfield, Mass., to be run as part of the Hartford & Connecticut Western road. The distance is about 16 miles, and the grades are easy all the way. If built the road would complete a through line between Springfield and the Hudson River at Rhinecliff. It is also said that, if the branch is built, it may be extended beyond Springfield to a connection with the Central Massachusetts road.

Indianapolis & Evansville.—The track is reported laid on this road from the late terminus at Oakland, Ind., south by west to Evansville, 30 miles, completing a line of 57 miles from Evansville northward to Washington Junction on the Ohio & Mississippi road. Regular trains were to be put on the extension this week.

Jacksonville, Tampa & Key West.—The grading on this road is now reported nearly done from Jacksonville, Fla., southward up the west bank of the St. Johns River to Palatka, a distance of 54 miles. Track has been laid from Jacksonville to Orange Park, 12 miles, and work is in progress.

Johnsonburg & Clermont.—This company has filed articles of incorporation to build a railroad from Clermont in McKean county, Pa., to Johnsonburg on the Philadelphia & Erie road, a distance of 20 miles. It will be an extension of the Buffalo, New York & Philadelphia's Clermont Branch.

Lake Erie & Western.—It is reported that the negotiations for the exchange of the old LaFayette, Bloomington & Muncie income bonds for the second-mortgage bonds of the Lake Erie & Western have come to an end in consequence of refusal of the Lake Erie & Western to concede as much as the bondholders wished. It is said that the difference is a wide one, the company offering to give its second-mortgage bonds only to one-half the amount of the face of the income bonds, while the bondholders claimed that the exchange should be even.

Little Rock & Fort Smith.—The stockholders of the Little Rock & Fort Smith and of the Little Rock, Mississippi & Texas companies are offered the right to purchase bonds and stocks, which latter will be issued as full-paid stock, in the Little Rock Junction Railroad Bridge Co. The amount allotted to each company is \$200,000 bonds and \$200,000 stock. The proportionate amount which all the stockholders of each company have a right to subscribe for is, approximately, 5 per cent. of the amount of stock held by each in the stock of either company.

Macon & Florida.—Notice has been given of application for a charter for this company, to build a railroad from Macon, Ga., southward to Live Oak, Fla., about 180 miles. A preliminary organization has been completed and surveys of the line begun.

Memphis & Charleston.—This road makes the following statement for the four months of its fiscal year, from July 1 to Oct. 31:

	1883.	1882.	Inc. or Dec.	P. c.
Earnings	\$430,588	\$360,961	I.	\$69,627 19.4
Expenses	203,410	270,165	I.	23,245 8.6
Net earnings	\$137,178	\$90,793	I.	\$46,385 51.0
Per cent. of expenses	63.1	74.8	D.	6.7

The road is leased to the East Tennessee, Virginia & Georgia Co., but its earnings are reported separately.

Memphis, Marion & St. Francis River.—This company has been organized to build a railroad from Hopefield, Ark., on the Mississippi, opposite Memphis, Tenn., westward through Marion to a point on the St. Francis River. The distance is about 25 miles.

Mexican Railroad Notes.—The following notes are from the Mexican Financier of Nov. 10:

The number of passengers carried on the Merida & Valladolid Railway in September, between Merida, Conkal and Chohul, was 338 first-class, 1,465 second class, and 1,171 third-class. The amount of freight carried during the month was 3,044 quintals.

The General Diligence Co. has made arrangement with the Mexican Central to establish a diligence line between the ends of the track as soon as Zacatecas or San Juan de Guadalupe may be reached. This will probably be early in December. The gap will be covered by two days' staging, making the shortest route between the capital and the States, giving about five days between the capital and the New frontier, and four or five days more from El Paso to New York and Boston, giving nine or ten days in all, which, with the opening of the railway, will be shortened probably to at least seven. Wells, Fargo & Co. will run their express this way.

Mr. Early, the Chief Engineer of the Pacific Division of the Mexican Central, is devoting his particular attention to the preparations for beginning work at the eastern end of the line, between Lagos and Guadalupe, as soon as the main line is completed between the capital and the frontier. He is now engaged in studies for the best route between the junction with the main line and Guadalupe. The most of the country in Jalisco, between Lagos and Guadalupe, is said to be barren and unpromising, but a large business awaits the railway at Guadalupe, the second commercial city of the republic, and between Guadalupe and the Pacific coast the line will run through one of the most fertile and populous regions in Mexico, touching numbers of important cities, including Tequila and Tepic. It is be-

lieved that some connection of this line with Mazatlan will be of much greater importance than its Pacific terminus at San Blas.

The main line of the Mexican National reached the important city of San Miguel de Allende, in the state of Guanajuato, last Monday, on its way from Acámbaro to San Luis Potosí. San Miguel de Allende has about 40,000 inhabitants, and considerable manufacturing is done there. The only station between Allende and Celaya is Soarí, where a large factory, owned by Mr. Gonzalez, of Celaya, is situated. Considerable business is expected at these points. Work on construction will be suspended on this part of the line for the present, and it is thought that possibly hereafter all the building may be done down from the northern end, owing to the expense of transporting material to this end. It is expected that the junction with the Mexican Central at Celaya, instead of bringing the two roads into opposition at that point, will prove a great benefit to both, as they will be made mutual feeders to each other, bringing each other a large amount of business. It is likely that the project for a union station and freight depot at the junction, instead of the two stations now a considerable distance apart, will be realized.

Missouri Valley & Pacific.—This company has filed articles of incorporation to build a railroad from Lemars, Ia., on the Illinois Central to Yankton, Dak. on the Missouri River; thence to Springfield, in Bon Homme county, also on the river, and from there across the prairies, via Lake Andes and through the Bijou Hills, to Chamberlain, where the Missouri will be crossed. From that city the main line is projected to a point north of Deadwood, in reaching which the coal fields and pine lands of the Black Hills will be traversed. A branch is projected from Chamberlain up the river to Bismarck, and another is projected from some point on the Lemars and Yankton Division to Sioux City.

Nashville, Chattanooga & St. Louis.—This company makes the following statement for October and the four months of its fiscal year from July 1 to Oct. 31:

	October.	1882.	1883.	1882.
Earnings.....	\$201,320	\$201,712	\$11,245	\$768,189
Expenses.....	109,236	110,333	419,255	435,718
Net earnings.....	\$92,084	\$91,379	\$391,990	\$332,471
Interest and taxes.....			220,983	216,266
Surplus.....			\$171,007	\$116,205

For the four months there was an increase in gross earnings of \$43,056, or 5.6 per cent.; a decrease in expenses of \$16,463, or 3.8 per cent., and an increase in net earnings of \$59,519, or 17.9 per cent. The interest and taxes increased \$4,717, or 2.2 per cent., leaving a gain in the surplus of \$54,802, or 47.2 per cent.

Nebraska City, Beatrice & Salina.—This company has been organized to build a railroad from Nebraska City, Neb., through Beatrice to a connection with the proposed Salina, Lincoln & Decatur road. It is intended to be a branch of that projected line.

New Castle & Green Valley.—A survey is in progress for this projected road from Glen Mary, Tenn., on the Cincinnati Southern road to the coal-fields on Obed River, a distance of about 40 miles.

New York, Lake Erie & Western.—At the annual meeting in New York, Nov. 27, a resolution was adopted finally approving and ratifying the lease of the New York, Pennsylvania & Ohio road.

New York & New England.—The following statement is made for the year ending Sept. 30, in advance of the publication of the report:

Gross earnings.....	\$3,598,653
Expenses (84.4 per cent.).....	3,013,616
Net earnings.....	\$585,037
Other income.....	3,205
Total.....	\$588,242
Interest, taxes and rentals.....	\$1,186,789
Miscellaneous.....	3,058
Deficit for the year.....	\$631,605

The large proportion of expenses is due to extensive renewals and improvements of road.

Norfolk & Western.—This company makes the following statement for October and the ten months ending Oct. 31:

	October.	1882.	1883.	1882.
Earnings.....	\$331,854	\$272,318	\$2,308,746	\$1,943,747
Expenses.....	139,903	119,688	1,220,254	1,066,126
Net earnings.....	\$191,951	\$152,630	\$1,088,492	\$877,621
Per cent. of exps.....	42	44	53	55

For the ten months there was an increase of \$364,990, or 19 per cent., in gross earnings, with an increase of \$154,126, or 14 per cent., in expenses, the result being a gain in net earnings of \$210,871, or 24 per cent.

The New River Division was opened to the coal fields on May 21, 1883. The earnings and expenses of this division are included in the above statement from that date.

Northern Central.—This company makes the following statement for October and the ten months ending Oct. 31:

	October.	1882.	1883.	1882.
Earnings.....	\$590,748	\$527,714	\$5,142,885	\$4,783,487
Working exps.....	280,786	284,251	2,775,814	2,723,909
Extraordinary exps.....	23,675	57,825	293,633	278,644
Total exps.....	\$304,461	\$342,076	\$3,071,447	\$3,002,553
Net earnings.....	\$286,287	\$185,638	\$2,071,438	\$1,780,934
Per cent. of exps.....	51.5	64.8	59.7	62.8

For the ten months there was an increase of \$359,398, or 7.5 per cent., in gross earnings; an increase of \$51,905, or 1.9 per cent., in working expenses, and of \$16,989, or 6.1 per cent., in extraordinary expenses, making an increase of \$69,894, or 2.3 per cent., in total expenses; the result being a gain in net earnings of \$290,504, or 16.3 per cent. The earnings and expenses of the Union Railroad are not included.

Northern Pacific.—In the United States Circuit Court last week Judge Wallace rendered his decision in favor of the Northern Pacific Co. in the suits brought by holders of common stock to enjoin the issue of second mortgage bonds. Judge Wallace in his decision concludes as follows:

"Equity will not be swift to grant the stringent relief of a preliminary injunction to an officious plaintiff who seems to have acquired his interest as a stockholder with a view of assailing transactions in the corporate affairs of which existing stockholders do not seem to have complained. The purchaser of a lawsuit is entitled to what he has bought, and may insist that his rights shall be recognized and enforced according to the settled principles of law and the rules of procedure which obtain irrespective of the motive of the litigant, but he

can only insist that such preliminary relief be granted as shall be absolutely indispensable to preserve the rights that cannot be adequately protected. That is the ultimate decision of the case. The restraining order is vacated and a preliminary injunction refused."

The grading on the Jamestown & Northern Branch is completed to Devil's Lake, 25 miles northward from the end of the track at New Rockford, Dak. Work has been suspended for the winter, and the track will not be laid to Devil's Lake until next spring.

Ohio Central.—The United States Circuit Court has appointed Thomas R. Sharpe as Receiver of the West Virginia portion of the River Division of this road. General Superintendent J. E. Martin remains in charge of the main line and that part of the River Division that is in Ohio. The appointment of Mr. Sharpe was on motion of Mr. E. L. Andrews, an attorney of New York, who has been conspicuous in a number of railroad litigations. Mr. Sharpe is also well known from his connection with the Baltimore & Ohio and the Long Island road.

Pennsylvania.—A new corporation, known as the Philadelphia & Lehigh Valley Co., has been organized under this company's control to build a branch from its new Reading line at a point near the mouth of Perkiomen Creek in Montgomery County to a junction with the Lehigh Valley road at Allentown. The line will be about 40 miles long and will be parallel and close to the Perkiomen Railroad.

This company's monthly statement shows for the month of October, as compared with October, 1882, on all lines east of Pittsburgh and Erie:

An increase in gross earnings of.....	\$215,294
An increase in expenses of.....	36,856
Net increase.....	\$178,438

For the ten months ending Oct. 31, as compared with the corresponding period last year, the same lines show:

An increase in gross earnings of.....	\$2,220,423
An increase in expenses of.....	1,569,939
Net increase.....	\$650,484

Carrying out these comparisons, we have the following:

	1883.	1882.	Inc. or Dec.	P. c.
Earnings.....	\$4,875,347	\$4,660,053	I.	215,294 4.6
Expenses.....	2,659,197	2,622,341	I.	36,856 1.5
Net earnings.....	\$2,216,150	\$2,037,712	I.	\$178,438 8.7
Per cent. of exps.....	54.5	56.3	D.	1.8

For the ten months:

Earnings.....	\$42,799,257	\$40,548,834	I.	\$2,250,423 5.5
Expenses.....	26,473,559	24,903,620	I.	1,569,939 6.3
Net earnings.....	\$16,325,698	\$15,645,214	I.	\$680,484 4.3
Per cent. of exps.....	61.9	61.4	I.	0.5

All lines west of Pittsburgh and Erie for the ten months of 1883 show a surplus over all liabilities of \$1,168,503, being a decrease of \$412,478 as compared with the corresponding period of last year.

To meet the rapid growth of the Clearfield coal business, and to satisfy the demands of the coal operators, the company has ordered the construction of 1,000 new gondola cars, to be used entirely for the coal traffic.

The National Docks Branch is now completed from a junction with the New York Division at the east end of Bergen Cut in Jersey City to the wharves of the National Storage Co. at Communipaw. It is 2½ miles long, and will be used for freight only. The branch is all double track.

Pittsburgh Short Line.—This company has been organized to build a railroad from Pittsburgh, Pa., to Montour Junction, a distance of 13 miles. It will connect with the Montour coal road.

Postal Telegraph.—The New York Tribune reports: "The Postal Telegraph Co. has sold all its property and franchises to the Postal Telegraph & Cable Co., which was recently organized under the laws of New York expressly for this purpose. The deed of conveyance, which was recorded this week, states the consideration at \$10,498,500. The transfer is merely the fulfillment of a plan, which has been under consideration for some time, for reducing the capital stock of the company and for correcting certain legal irregularities in the organization and conduct of the original company. When the present owners secured control they discovered that the previous management had not always acted in strict conformity with the state laws, and while their council were of the opinion that the irregularities were not sufficient to vitiate the company's charter, it was decided to organize a new company. The conveyance made to the Postal Telegraph & Cable Co. was in accordance with this decision. The new company is owned by the same persons who have recently controlled the former one. There will be some changes in the Board of Directors probably, but John W. Mackey will be President of the company."

Railway Shareholders' Association.—The Railway Shareholders' Association, of New York, has filed articles of incorporation. The object of the association is the receiving, obtaining, collecting and accumulating of items, matters of news and facts regarding railroad corporations, undertakings, systems, construction, investments, management, taxation, legislation, judicial decisions, etc., and supplying, selling, vending and furnishing the same in newspaper, pamphlet, book or such other form as shall be deemed expedient for the promotion of the stability and for the augmentation of the values of railway shares and securities. The capital is \$100,000. The trustees named are C. P. Huntington, Sidney Dillon, John Livingstone, Horace Porter and William Hall, of New York; George B. Roberts and Franklin B. Gowen, of Philadelphia; William B. Strong, of Boston; Alexander Mitchell, of Milwaukee; William K. Ackerman and Albert Keep, of Chicago; Wm. J. Raoul, of Savannah, and Charles C. Harris, of Brooklyn. Operations are to be carried on in the United States, Mexico, Canada and all other parts of the American continent, and Great Britain and all British possessions.

Letters have been published from Messrs. Gowen, Huntington, Porter and Roberts, disavowing all connection with the Association, and saying that their names were used without authority; which looks as if there was something wrong.

Rochester & Pittsburgh.—Stockholders of record on Dec. 12 will have the option of subscribing for the proposed issue of second-mortgage bonds at 75. These bonds will be a first lien upon the equipment which is to be bought with their proceeds, upon the steam canal boats owned by the company, and upon the securities it holds of the Buffalo Terminal Co. and the Rochester & Pittsburgh Coal & Iron Co., and a second lien upon the Buffalo Division.

Shenandoah Valley.—This company makes the following statement for October:

	1883.	1882.	Inc. or Dec.	P. c.
Earnings.....	\$93,683	\$61,720	I.	\$31,963 51.5
Expenses.....	61,326	56,662	I.	4,664 8.2
Net earnings.....	\$32,357	\$5,058	I.	\$27,299 545.0
Per cent. of exps.....	65	92	D.	27

For the ten months ending Oct. 31 the net earnings were

\$163,369, as against a deficit of \$895 for the corresponding period last year.

South Pennsylvania.—Work has been commenced on tunnels Nos. 2, 4, 5 and 6 of this road by Ackerman & Evans, of Binghamton, N. Y.; Rodgers & O'Brien, of Poughkeepsie, N. Y.; McMahon, Shanahan & Queen, of Lexington, Va.; and Charles McFadden, of Philadelphia, the contractors. The nearest hauling point for supplies to any tunnel will be Berlin, or the Berlin Branch of the Baltimore & Ohio, which is 7 miles from No. 6, or the Allegheny Mountain Tunnel. Tunnel No. 4 will be the longest on the road, 6,700 ft. No. 7, or Laurel Hill Tunnel, has not been let finally as yet. The awards for the 85 miles of grading for which proposals have been asked are not expected before Jan. 1 next.

Texas Trunk.—Track is now laid on the extension of this road from Kaufman, Tex., southwest 15 miles. This completes the section of 50 miles from Dallas which the company's charter required it to finish by December.

Toledo, Cincinnati & St. Louis.—A plan of reorganization has been proposed, which, however, does not come from the regular bondholders' committee. In substance it proposes the issue of \$3,500,000 receivers' certificates for the purpose of paying off car-trust bonds, the debenture bonds and for necessary improvements of the road; these certificates to be replaced by preferred mortgage bonds as soon as the foreclosures can be completed and a new company organized. It is further proposed that the new company, when organized, shall issue \$10,625,000 general mortgage bonds to replace the various first-mortgage issues now outstanding, all of which are to be put in at par except the Toledo, Delphos & Burlington firsts at 150, and the Spring Grove, Avondale & Cincinnati firsts at 50. The common and preferred stocks and the income bonds are to be cut off altogether.

This plan seems to meet with much criticism, and is not likely to be adopted without changes.

West Virginia Central & Pittsburgh.—Track on this road is now laid to the Fairfax Stone, which marks the extreme point of the western boundary of Maryland. The new terminus is near the summit of the Alleghenies, and is 47 miles from Piedmont. Trains will soon run to the new terminus.

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The income statement is as follows:

Net earnings, as above.....	\$7,357,864
Income from other sources.....	876,790
Total.....	\$8,234,653
Interest, rentals and other charges.....	6,968,978

Surplus for the year.....\$1,265,675

This surplus shows an increase of \$98,843 over that for the previous year.

The total tonnage of freight transported was 13,811,782 tons, an increase of 1,716,544 tons. Of this freight 6,925,469 tons were coal, the increase in which was 820,797 tons.

Fitchburg.

The report of this company to the Massachusetts Railroad Commission for the year ending Sept. 30 gives the following figures in advance of the publication of the full report.

There was no increase of mileage during the year. The stock remains unchanged, its amount being \$4,950,000. The bonded debt was increased \$500,000, and is now \$3,500,000.

The earnings for the year were as follows:

	1882-83.	1881-82.	Inc. or Dec.	P. c.
Freight.....	\$1,835,422	\$1,521,576	I.	\$313,846 20.6
Passenger.....	897,222	816,772	I.	80,450 9.8
Mail, etc.....	233,033	275,382	D.	42,349 15.4
Total.....	\$2,965,677	\$2,613,730	I.	\$351,947 13.5
Expenses.....	1,877,941	2,007,896	I.	129,955 6.4
Net earnings.....	\$777,736	\$605,844	I.	\$171,892 28.4
Gross earn. per mile.....	19,496	17,182	I.	2,314 13.5
Net.....	5,113	3,983	I.	1,130 28.4
Per cent. of exps.....	73.78	76.82	D.	3.04

The increase in earnings was large, and was accompanied by a moderate increase in expenses, the result being a very large gain in net earnings.

The income statement is as follows:

Net earnings, as above.....	\$777,736
Rentals.....	\$230,164
Interest.....	228,725
Dividends, 6 per cent.....	297,000
Surplus for the year.....	\$21,847

The report shows that during the year one passenger was killed and two hurt; four employes were killed and 45 injured; 11 other persons killed and 12 hurt, making a total of 16 persons killed and 59 injured during the year.

Memphis & Charleston.

This company owns a line from Memphis, Tenn., to Stevenson, Ala., 272 miles, with branches from Moscow to Somerville, Tenn., 13 miles, and from Tusculum to Florence, Ala., 7 miles; it leases the use of the Nashville, Chattanooga & St. Louis track from Stevenson to Chattanooga, Tenn., 38 miles, making 292 miles owned and 330 miles worked.

The road is leased to the East Tennessee, Virginia & Georgia Co., but its operations are reported separately. The following statements have been published for the year ending June 30.

The earnings for the year were as follows:

	1882-83.	1881-82.	Inc. or Dec.	P. c.
Freight.....	\$714,286	\$658,438	I.	\$55,848 8.5
Passage.....	431,145	445,111	D.	13,966 3.2
Mail, etc.....	87,502	212,100	D.	124,598 58.8
Total.....	\$1,232,933	\$1,315,729	D.	\$82,796 6.1
Expenses.....	845,498	1,079,791	D.	234,293 21.7
Net earnings.....	\$387,435	\$235,938	I.	\$151,497 65.5
Gross earn. per mile.....	3,745	3,987	D.	242 6.1
Net.....	1,182	715	I.	467 65.5
Per cent. of exps.....	68.40	82.07	D.	13.67

The decrease in expenses was chiefly in maintenance of way, a large expenditure on the road for several years having much improved its condition.

The income account was as follows:

Net earnings, as above.....	\$387,435
Interest on bonds.....	\$295,260.00
Interest on floating debt.....	43,574.67
Surplus for the year.....	\$51,609.39

The capital stock of the company is \$5,312,725. The funded debt is \$4,222,000, which the additions authorized, as noted below, will increase to \$5,722,000, or \$19,600 per mile.

For 1881-82 there was a deficit of \$101,611, showing a gain of \$153,301 last year.

The stockholders have authorized the issue of \$1,000,000 new second-mortgage bonds for the purpose of funding the floating debt. They have also authorized the purchase of rolling stock to the amount of \$500,000 under a car-trust arrangement, as the road is much in need of additional equipment.

Baltimore & Ohio.

At the close of its 57th fiscal year, on Sept. 30 last, this company operated directly the following lines, owned or leased:

	Miles.
Main Stem, Baltimore to Wheeling.....	379.0
Camden and Locust Point branches in Baltimore.....	6.5
Frederick Branch.....	3.5
Valley Branch, Harper's Ferry to Harrisonburg.....	101.0
Metropolitan Branch, Point of Rocks to Washington.....	43.0
Alexandria Branch (Wash. City & Pt. Lookout R. R.).....	12.5
Somerset & Cambria R. R.....	45.0

Total Main Stem and branches.....	590.5
Washington Branch, Relay House to Washington.....	31.0
Parkersburg Branch, Grafton to Parkersburg.....	105.4
Central Ohio Div., Bellaire to Columbus.....	138.6
Lake Erie Div., Newark to Sandusky.....	116.0
Chicago Div., Chicago Junction to Chicago.....	263.0
Wheeling, Pitts. & Balt., Wheeling to Washington, Pa.....	32.0
Newark, Somerset & Straitsville.....	150.0
Pittsburgh Div., Cumberland to Pittsburgh.....	44.0
" " branches.....	41.5
Pittsburgh Southern, Washington, Pa., to Pittsburgh.....	191.5
Total.....	1,549.5

The only addition during the year was the Pittsburgh Southern road, 37.5 miles, which is included from Nov. 1, 1882.

In addition to the above lines there are operated under contract, but not included in report, the Washington County road, from Weverton to Hagerstown, Md., 34 miles, and the Valley Railroad, from Harrisonburg, Va., to Lexington, 62 miles.

The following statements are from President Garrett's report as presented at the annual meeting on Monday of this week.

The report says: "The loan by the city of Baltimore was made under an ordinance passed Dec. 27, 1853, under which 10 per cent., or \$500,000, was retained as a basis for

a sinking fund, and 90 per cent. in city stock paid over to the Baltimore & Ohio Co. at par. In consequence of the depression at the period during which this stock was sold, namely, from 1855 to 1859 inclusive, the sales were made by the Baltimore & Ohio Co. at a loss under par of \$173,506. Thus the company, deducting the sum retained for sinking fund, \$500,000, and the loss by the sale of the city bonds under par, \$173,506, received from the loan only \$4,326,494.

"The Baltimore & Ohio Co. not only made all the loss on the sale of this stock under par, but it also paid all the premiums over par on the purchases which were made for investment in city stock for the sinking fund, which premiums amounted to \$96,683.

"It is shown, therefore, that the city of Baltimore throughout has been fully protected from any possible loss, and the balance of the loan, \$2,575,000, which is more than doubly secured, will be paid in full at the very time, namely, Jan. 1, 1890, when the obligation assumed by the city on behalf of the road will mature. The city thus, at an important period, extended an accommodation to the company through the economies connected with which its dividends, of a very profitable character, on its \$3,250,000.00 stock in the Baltimore & Ohio Co. have been paid, and the entire transaction has proved not only without loss to the city, but with important advantages both to it and the company.

"The payments for investments on account of the sinking funds for the redemption of the sterling loans due in 1895, 1902, 1910 and 1927, during the year amounted to \$627,395.

"In accordance with the agreement with the city of Baltimore, the eighth annual payment, namely, \$40,000 of the principal of the bond for \$1,000,000 given for the purchase of the interest of the city in the Pittsburgh & Connellsville Railroad Co., has been made, thus reducing this obligation to \$650,000.

"The following statement shows the payments made and the increments in sinking funds during the fiscal year for account of the respective debts:

Increment of sinking funds for the redemption of the sterling loans due in 1895, 1902 and 1910.....	\$579,404
Payment on account of the principal of debt to city of Baltimore for the purchase of its interest in the Pittsburgh & Connellsville Co.....	40,000
The Pittsburgh & Connellsville sinking fund.....	27,223
The Baltimore & Ohio & Chicago sinking fund.....	47,931
The Washington City & Point Lookout sinking fund.....	5,865
Total.....	\$700,483

"The following shows the aggregate of payments made on account of the principal, and the investments for sinking funds on account of the debts stated, namely:

Mortgage loan redeemable in 1880.....	\$120,500
Mortgage loan redeemable in 1885.....	790,000
Bonds of the Northern Virginia Co., for \$500,000, indorsed by the Baltimore & Ohio Railroad Company, payable in 1885.....	360,000
Loan of the city of Baltimore.....	2,425,000
Sterling loan, redeemable in 1895.....	1,569,412
Sterling loan, redeemable in 1902.....	2,011,036
Sterling loan, redeemable in 1910.....	1,089,564
Sterling loan for the Baltimore & Ohio & Chicago Co., redeemable in 1927.....	259,661
Purchase of the interest of the city of Baltimore in the Pittsburgh & Connellsville Co.....	320,000
Sinking fund of the Pittsburgh & Connellsville Co.....	172,267
Sinking fund of the Baltimore, Washington & Alexandria Branch of the Washington City & Point Lookout.....	44,044
Total.....	\$9,191,546

Further details as to the application of the surplus for the year and the profit and loss account will be found in other parts of the report.

TRAFFIC.

The traffic reported is as follows:

	1882-83.	1881-82.	Inc. or Dec.	P. c.
Tons through freight.....	2,108,325	2,043,227	I.	65,098 3.2
Bbl. flour to Balto.....	701,935	607,038	I.	94,897 15.6
Bush. wheat to Balto.....	6,633,443	6,586,814	I.	46,629 0.7
Bush. corn to Balto.....	4,935,900	5,017,719	I.	81,819 1.6
St. Louis grain to Balto.....	12,770,392	8,343,340	I.	4,427,052 53.1
Tons lumber to Balto.....	93,327	85,268	D.	8,059 9.4
Tons live stock carried.....	90,530	80,284	I.	10,246 12.7
Tons coal:				
Main Stem, Co.'s use.....	409,695	386,623	I.	23,069 5.9
Main Stem, revenue.....	2,171,862	2,134,600	I.	37,262 1.8
Total Main Stem.....	2,581,557	2,521,223	I.	60,334 2.4
Pittsburgh Div.....	2,402,130	2,447,749	D.	45,619 1.9
Trans-Ohio lines.....	684,996	678,041	I.	6,955 0.9
Total tons of coal.....	5,668,583	5,647,016	I.	21,567 0.4

The tonnage of the Pittsburgh Division includes coke. Of the revenue coal tonnage over the Main Stem 1,654,821 tons were delivered at Baltimore for local use or shipment by water, and 517,041 tons were delivered at local or western points.

The tonnage of through merchandise East and West was:

	Tons.	For	Tons.
1871.....	435,207	1878.....	1,149,409
1872.....	557,609	1879.....	1,425,629
1873.....	640,265	1880.....	1,980,397
1874.....	752,256	1881.....	2,014,110
1875.....	572,101	1882.....	2,043,227
1876.....	1,093,393	1883.....	2,108,325
1877.....	1,047,943		

This tonnage for last year is the largest reported. The increase shown has been nearly continuous, only one year of the 13 showing a decrease from the year preceding.

EARNINGS OF THE ROAD.

The earnings of the entire system for the year compare as follows:

	1882-83.	1881-82.	Inc. or Dec.	P. c.
Earnings.....	\$19,739,838	\$18,383,876	I.	\$1,355,962 7.4
Expenses.....	11,034,015	10,920,214	I.	104,801 0.9
Net earn.....	\$8,705,823	\$7,463,662	I.	\$1,242,161 16.8
Gross earn. per mile.....	12,708	12,159	I.	549 5.0
Net earn. per mile.....	5,631	4,930	I.	701 14.2
Per cent. of exps.....	55.89	59.44	D.	3.55

The earnings show a large increase, while the increase in working expenses was very small. The gain in net earnings was, consequently, very large. The net earnings are the largest reported for a number of years.

The earnings and expenses of the several lines were as follows:

	Earnings.	Expenses.	Net earnings.
Main Stem.....	\$11,579,839	\$6,147,656	\$5,432,183
Washington Br.....	346,505	124,257	222,248
Parkersburg Br.....	728,527	174,466	554,061
Central Ohio.....	1,103,859	716,051	387,808
Lake Erie Div.....	969,128	707,347	261,781
Chicago Div.....	1,878,167	1,304,664	573,503
Pittsburgh Div.....	2,813,173	1,334,858	1,478,315
Wh., Pitts. & Balt.....	72,091	40,070	32,021
Newark, Som. & Str.....	164,781	145,269	19,512
Pitts. Southern.....	43,788	35,337	8,451
Total.....	\$19,739,838	\$11,034,015	\$8,705,823

*From Nov. 1, 1882.

The expenses charged to the Washington Branch are the renewals, maintenance and improvements; the transportation expenses are included in those of the Main Stem.

The net earnings of the Chicago Division were \$578,501; the taxes were \$48,012, and the interest upon the sterling loan taken for account of this Division was \$388,957, leaving a net surplus of \$136,534.

The net earnings of the Pittsburgh Division were \$1,478,275; the interest charges were \$681,725, leaving a surplus of \$796,550. From this the sum of \$503,213 was spent for 25.4 miles of second track and 7 miles of sidings, leaving a balance of \$293,337.

The net earnings of the several lines compare as follows:

	1882-83.	1881-82.	Inc. or Dec.	P. c.
Main Stem.....	\$5,432,183	\$4,572,944	I.	\$859,239 18.8
Washington Br.....	222,248	221,254	I.	994 0.4
Parkersburg Br.....	260,061	108,071	I.	151,990 140.8
Central Ohio.....	387,788	314,932	I.	72,856 23.1
Lake Erie Div.....	291,781	234,701	I.	57,080 24.3
Chicago Div.....	573,503	446,407	I.	127,096 28.5
Pittsburgh Div.....	1,478,275	1,542,125	D.	63,850 4.1
Wh., Pitts. & Balt.....	32,021	1,151	I.	30,870
Newark, Som. & Str.....	19,512	13,078	I.	6,434 49.5
Pittsburgh Southern.....	8,451			

The net earnings of the Chicago Division, of the Wheeling, Pittsburgh & Baltimore Railroad and of the Lake Erie and Central Ohio divisions, have been credited to the accounts for interest of those companies.

MAIN STEM AND BRANCHES.

The following statement shows the earnings and expenses of the Main Stem for the fiscal years 1881, 1882 and 1883, including the Winchester & Potomac, Winchester & Strasburg, the Strasburg & Harrisonburg, the Metropolitan Branch, the Washington City & Point Lookout, and the Somerset & Cambria railroads:

	1881.	1882.	1883.
EARNINGS.	\$11,122,259	\$10,556,569	\$11,579,839
General expenses.....	\$210,626	\$198,227	\$200,734
Losses by accidents, etc.....	45,833	72,049	56,609
Expenses of transportat'n.....	2,156,414	2,258,207	2,486,047
Repairs of railway.....	1,083,970	1,003,249	796,576
Repairs of water stations.....	16,552	10,591	13,039
Repairs and construction of depots.....	141,231	154,460	186,063
Repairs of bridges.....	74,691	55,788	55,788
Repairs of telegraph lines.....	25,065	39,204	76,781
Repairs of stationary machinery.....	98,202	95,755	118,277
Watching cuts.....	34,854	31,679	30,346
Watching tunnels.....	4,407	4,552	5,452
Watching bridges.....	18,929	18,663	18,737
Pumping water.....	29,367	28,361	28,217
Repairs of locomotives.....	680,795	654,237	624,146
Repairs of passenger cars.....	230,511	235,533	290,387
Repairs of burden cars.....	911,996	675,248	709,029
Cleaning engines and cars.....	81,558	88,909	92,415
Contingent expenses, machinery department.....	9,786	11,574	7,186
Fuel.....	389,894	337,305	319,143
Preparing fuel and filling tenders.....	21,933	20,032	20,096
Total.....	\$6,275,643	\$5,983,625	\$6,147,656
Earnings more than exps.....	\$4,846,616	\$4,572,943	\$5,432,183
Working expenses.....	56.42 per ct.	56.63 per ct.	53.03 per ct.

It is shown that the earnings of the Main Stem and the branches stated, in comparison with the fiscal year 1882, have increased \$1,023,269, and the working expenses have increased \$164,029, making a comparative increase of the net profits of \$859,239.

The expenses of working and keeping the roads and machinery in repair amounted to \$6,147,656, being 53.08 per cent. upon the earnings, showing a decrease of 3.60 per cent. compared with the previous year, and of 3.34 per cent. compared with 1881. It will be seen in the statement of the gross earnings and expenses of all lines and branches operated by the company that the net results for the fiscal year showed an increase and gain over 1882 of \$1,251,161.

The passenger earnings exhibit an increase from \$1,922,401 in the preceding year, \$1,714,922 in 1881, and \$1,379,990 in 1880, to \$2,020,284.

FINANCIAL CONDITION.

President Garrett's report says: "Semi-annual cash dividends of 5 per cent. upon the capital stock were paid Nov. 1, 1882, and May 16, 1883.

"The profit and loss account shows an increase for the past fiscal year of \$1,855,821. It will be seen by this account that the surplus fund, which represents invested capital derived from net earnings, and which is not represented by either stock or bonds, now amounts to \$45,783,480.

"The exceptional and highly conservative system of the Baltimore & Ohio Co., without precedent in America or Europe, by which more than \$45,000,000 of net earnings, unrepresented by stock or bonds, have been invested, during a long series of years, in valuable improvements and extensions, in connecting lines, in the great iron bridges over the Ohio River, in elevators, wharves, piers, docks, terminal facilities, real estate, stations, etc., readily enables the company to continue the payment of semi-annual dividends of 5 per cent. each on its capital stock, which amounts to only \$14,783,700, a sum so limited as to present a marked contrast to that of all competing trunk lines.

"The capital stock of the New York, Lake Erie & Western Railroad is \$77,087,600; that of the New York Central & Hudson River Railroad \$89,428,300, and that of the Pennsylvania Railroad \$85,801,300.

"This satisfactory condition under serious and prolonged competition and frequent unwise action of antagonistic interests shows that the company, whilst continuing to effect excellent results for all holding investments in its property,

Hopkyns Railroad, and additional investments in the Hempfield and the Baltimore & Ohio & Chicago railroads. In addition to crediting the sums of these accounts for the purpose of meeting the remainder of those losses \$854,846 have been charged to the profit and loss account, thus reducing the earnings of the surplus fund for this fiscal year from \$2,710,667 to \$1,855,821.

"The heavy losses made through the assistance rendered for many years to the Marietta & Cincinnati road to secure the completion and effective working of that important line it is believed will be justified, great as they have been, by the results which will be realized in promoting the trade and intercourse between Baltimore and Washington, and the city of Cincinnati and the entire Southwest.

"The extraordinary advantages of this short line to and from Cincinnati and all the regions connected with that important centre of commerce and manufactures, cannot fail to be recognized when the distances between Cincinnati and Baltimore by this route and by other routes to New York are compared.

"While the distance between Cincinnati and Baltimore by the Cincinnati, Washington & Baltimore Railway, the Parkersburg Branch and the Main Stem of the Baltimore & Ohio is 579 miles, the distance to New York by the New York Central, namely, via Buffalo and Albany, is 868 miles, making the difference in favor of Baltimore as thus compared with New York of 289 miles, a difference so striking as to be controlling in the ultimate direction of trade alike for the ordinary interchanges of traffic and for imports and exports.

"Within a brief period an additional line from Columbus to Clinton Valley, on the Cincinnati, Washington & Baltimore road will be open to be operated in connection with the Central Ohio and the Ohio & Baltimore Short Line and the Pittsburgh Southern road, making a direct and excellent route for passengers and freight between Pittsburgh and the Pittsburgh & Connellsville road and the city of Cincinnati and the Southwest.

THE WASHINGTON BRANCH.

"Notwithstanding the excellent condition and satisfactory working of the Washington Branch it will be observed that the net earnings compared with the preceding year show an increase of but \$94,21, while the Pennsylvania Co.'s line between Baltimore and Washington—the Baltimore & Potomac—for its last fiscal year shows an increase in its net earnings over the preceding year of \$180,778.13. This comparative increase arises exclusively from the control the Pennsylvania Co. at present has of the lines between Baltimore and Philadelphia and New York.

"The imperfect connections of the Pennsylvania Railroad Co. for Philadelphia and New York business to and from the Washington Branch and the Main Stem of the Baltimore & Ohio Railroad Co. have caused a diminution of revenue instead of the heavy increase which should have been made. A large portion of the Southern business of the Baltimore & Ohio Co. has been thus practically cut off. Upon the completion of the Philadelphia Branch of the Baltimore & Ohio road and the Baltimore & Philadelphia Railroad the difficulties which are now caused by delayed and unsatisfactory connections will be removed, and the Baltimore & Ohio Co. will then be restored both for its Southern and Western business to a position which will enable it to much more successfully compete for all Northern and Southern and Western traffic. It is expected on the opening of the Philadelphia Branch of the Baltimore & Ohio and of the Baltimore & Philadelphia Railroad that the time between Baltimore and Philadelphia will be reduced to two hours, between Washington and Philadelphia to three hours, between Baltimore and New York to four hours, and between Washington and New York to five hours. At present passengers between Baltimore and Washington are transported by the quick trains of the Baltimore and Ohio Company in 50 minutes, and it is determined to reduce the time of these trains on the next schedule to 45 minutes. Thirty-eight passenger trains are now run between Baltimore and Washington daily.

"Much improved arrangements will also be made for the crossing of passengers over the Hudson River.

"It is anticipated that the system for the transfer of passengers at Baltimore, between Locust Point and Canton, over the Patuxent River, will be adopted for the transfer between the Jersey shore and New York; namely, that all cars with passengers will be transferred upon suitable steamers, so that the passengers will not leave the cars until landed on Manhattan Island. The public will thus, as in many other forms, be greatly benefited by the construction of this important competing road, while at the same time it in a greater degree will promote the local interests of Baltimore, Washington and Philadelphia, and the states of Maryland, Delaware and Pennsylvania.

"In 1882 the Virginia Midland Co. purchased the one-half interest in the tugs and barges previously owned by the Baltimore & Ohio Co. and used for the transfer of freight over the Potomac River between Alexandria and Shepherd. During the fiscal year 35,789 tons of freight have been transferred from Shepherd to Alexandria and 25,245 tons from Alexandria to Shepherd with this plant.

"By the use of this relatively inexpensive route as compared with that by the long bridge over the Potomac and through Washington a material distance can be saved. By this route, when proper arrangements are made, the time now required for the transportation of passengers between the North and South will be reduced one hour."

ADDITIONS TO PROPERTY.

The report says: "All the tracks of the Main Stem and of the Washington, Metropolitan and Parkersburg branches are now laid with steel rails. The increased cost of steel substituted for iron rails has been uniformly charged to the repair account.

"The condition of the road bed, tracks and engines has been brought to a high standard. A large number of new and superior sleeping coaches, parlor and thoroughfare cars have been added, replete with every modern improvement and convenience.

"Thirty engines were built at the company's works at Mount Clare, namely: 22 of the largest class for freight service, and known as the Consolidation, each weighing 107,250 pounds, with cylinders 20x24 in., 50 in. driving wheels, 8 drivers connected with a 2-wheel pony truck; 3 for passenger service, with cylinders 19x24 in. and 3 with cylinders 18x24 in., and 4 drivers of 69 in. each in diameter, weighing 91,000 pounds, and 2 for switching purposes, weighing 67,050 pounds, with cylinders 17x24 in. and with 4 drivers of 50 in. each in diameter. Of the number constructed, 22 engines, costing \$216,443, have been charged to rolling power, and 8 costing \$62,527, which replace that number withdrawn, because their capacity and patterns were not adapted to the present requirements of the service, have been charged to the repair account.

"In all 1,981 have been built and rebuilt at Mount Clare and other shops of the company. The cars thus built and rebuilt include 15 eight-wheeled passenger, 51 ft. 8½ in. long, with large windows and double blinds, finished in the interior with solid mahogany and bronze trimmings, decorated with oak head linings removable in sections, and furnished with

three double-burner bronze lamp; one car for the postal service with six-wheeled trucks; one baggage car, 51 ft. 8½ in. long, with standard trucks and all modern conveniences; 1,332 house, 207 stock, 28 eight-wheeled iron coal, 10 express, 139 gondola, 2 hopper gondola, 217 side dump, 15 caboose, 3 flat bottom and one riggers car. All the freight cars built have a capacity of 40,000 lbs., being nearly double that of the cars formerly used in the service. Of this aggregate of 1,981 cars, 1,442 being new and additional plant, and costing \$808,372, have been charged to rolling power, 539 cars were built to replace that number worn out and destroyed, and their cost \$162,261, has been charged to the repair account; 200 house cars have been fitted with air brakes and arranged with ventilation for the transportation of perishable freights, and 683 cars have received thorough repairs. The capacity of 194 cars has been increased from 26,000 to 40,000 pounds. The cost of these improvements, as well as of the repair, \$194,406, has been charged to the repair account. The fixed policy of the company is to continue to add large and effective facilities, by which its increasing business and the commerce of the port of Baltimore can be thoroughly accommodated and promoted.

NEW LINES.

"The Baltimore & Ohio Railroad Co., under resolutions adopted unanimously by the stockholders, is building the Philadelphia Branch from a point of connection with Main Stem to the northern boundary line of Cecil County, in the state of Maryland, where it connects with the road which the Baltimore & Philadelphia Railroad Co. is constructing through Delaware, by way of Wilmington, to and into the city of Philadelphia.

"The railroad of the latter company is being built under a contract between it and the Baltimore & Ohio Co., which secures to the Baltimore & Ohio Railroad Co. all the first mortgage 4½ per cent. bonds of the Baltimore & Philadelphia Railroad Co. These bonds of the Baltimore & Philadelphia Railroad Co. with other securities have been placed in the hands of Trustees as security for the loan of \$2,400,000.

"This loan issued by the Baltimore & Ohio Railroad Co. for the construction of the road between Baltimore and Philadelphia is payable in 1933, bears 4½ per cent. interest per annum payable semi-annually in London and has been negotiated at par.

"During the fiscal year the Pittsburgh Southern Narrow Gauge Railroad extending from Washington, Pa., to Pittsburgh, 37½ miles, has been purchased. The gauge of that portion of the line in Pennsylvania between Washington and Finleyville, 17¼ miles, was increased in width from 3 ft. to the standard gauge 4 ft. 8½ in., and a new line, 15½ miles in length, constructed between Finleyville and Glenwood on the Pittsburgh Division. The work has been well and substantially done, the new portion of the line having been laid with steel rails of 60 lbs. weight per yard.

"This line has been opened for traffic since Aug. 1, affording a short and effective outlet from Pittsburgh and the Pittsburgh Division to the West via Washington, Pa., Wheeling and the Trans-Ohio divisions. The company is thus enabled to transport to the western cities coke, gas coal and the manufactured products of Pittsburgh which have heretofore been transferred at Pittsburgh to competing lines for transportation to the West. The value and effectiveness of the line has already been fully demonstrated by the large traffic offering, not only west-bound from the coke and coal regions and Pittsburgh, but also in grain and provisions from Chicago and other western cities, and in iron ore from Sandusky to Pittsburgh and other manufacturing centres in Western Pennsylvania.

"The Wheeling, Pittsburgh & Baltimore Division between Washington, Pa., and Wheeling, 32 miles, has been much improved in order to meet the requirements of this large and additional traffic.

"All of the graduation, bridging and masonry on the Valley Railroad between Staunton and Lexington, a distance of 36 miles, has been completed, and all but four (4) miles of the track has been laid. This, it is expected, will be finished and the road opened for business before Nov. 1. The line has been well and substantially built and laid with steel rails.

"This line will form at Lexington a closely co-operative connection with the Richmond & Allegheny Railroad for Lynchburg and Richmond, and it is expected that a large traffic in iron ore from the James River ore beds to Pittsburgh and other points, and in coke from the Connellsville region to Lynchburg, etc., will be transported, in addition to a traffic in live stock, grain, merchandise and miscellaneous freight between Southern and Eastern Virginia and Baltimore and places reached by the lines of the Baltimore & Ohio Railroad Co.

"The Valley Railroad, as now constituted, embraces the line from Harrisonburg to Staunton, 26 miles, and Staunton to Lexington, 36 miles, being 62 miles, and by its direct line from Harrisonburg via Strasburg to Winchester, thence continuing by the Winchester & Potomac road, leased and worked by the Baltimore & Ohio Co., to Harper's Ferry, and by the Main Stem from Harper's Ferry to Baltimore, presents a superior line of 243 miles from Lexington and Baltimore, and by the Metropolitan Branch of 217 miles from Lexington to the National Capital.

"This line will doubtless command a large business and lead to much closer relations and more extended intercourse between important regions traversed and Baltimore, both in passenger and freight interchanges.

THE SUMMER HOTELS IN THE ALLEGHANIES.

"The increase in the accommodations of the Deer Park and Oakland Hotels, a statement of which was made in the last report, gave great satisfaction during the past season to numerous guests. The location of these hotels in the table lands of the Alleghenies, nearly 3,000 ft. above the sea, furnishes admirable summer homes for visitors from the East, West, North and South. The climate and pleasant natural surroundings of these resorts are perhaps unexcelled in America or Europe. The 24 square miles of table lands upon the highest elevation of the Alleghenies, the streams from the eastern slope of which flow through the Potomac into the Chesapeake and Atlantic, and from the western slope through the Ohio and Mississippi rivers into the Gulf of Mexico, are constantly receiving additions to their permanent and especially their summer populations.

"This delightful region will doubtless become, as soon as more generally known, a leading summer resort. New roads and drives in the charming country adjacent to these mountain hotels have been continuously constructed, and the roads formerly made have been much improved.

"The great economy, comfort and rapidity with which these summer homes are reached from Eastern and Western cities and sections continue to secure a large and increasing travel.

BALTIMORE & OHIO EMPLOYEES RELIEF ASSOCIATION.

"The operations of the Relief Association for the past fiscal year have continued to be most beneficial and useful to the employees of the company.

"There has been paid for the benefit of members \$205,187 in 8,824 payments, which, added to the sum pre-

viously paid, makes a total of \$549,363 in 24,776 individual payments. The active membership is at present 15,989.

"Much attention has been given to sanitary conditions along the lines under the charge of the company, and the results have been gratifying. The drainage of the road, the safety, cleanliness and ventilation of the shops, stations and other buildings; the improvement of the character of the water used for drinking purposes, and many minor features affecting the health and comfort of both the employees and patrons of the company have received thorough and effective attention.

"Earnest efforts were made during the past season to prevent the spread of malarial and other diseases. Large quantities of the best remedies under careful medical advice were distributed with excellent results. During August last the permanent employees on the line under construction between Baltimore and Philadelphia who were in any manner hazardedly employed, were admitted to membership in the Association.

"The advantages offered by the Association are constantly becoming more appreciated, as is shown by the desire of many members to increase their interest by paying additional premiums for increased benefits, and to retain their membership after leaving the service of the company.

"The new features adopted and which were explained in the last annual report are much appreciated and approved. The amount received on deposit in the savings fund aggregates \$81,137. The greater portion of this sum has been invested in loans to members for the purchase and improvement of homesteads upon the lines of the company. The facilities of the building feature, which was placed in practical operation in May last, have been fully taxed. Many employees have stated their desire to avail of the advantages offered by this system during the next year.

CHESAPEAKE & DELAWARE SHIP CANAL.

"The construction of this canal, so important for commercial as well as military and naval purposes, continues to attract great interest and attention. The appropriation made by Congress on Aug. 2, 1882, to complete the surveys for a ship canal to connect the Chesapeake and Delaware bays has been expended as directed, in obtaining information which will enable the Secretary of War to decide which of the routes suggested is the best. In view of the increased advantages of the port of Baltimore, in connection with the deepening of the channel for the use of the country, the early construction of this canal becomes of still greater importance. The saving of 200 miles in distance between Baltimore and eastern ports, as well as between Baltimore and the northern ports of Europe, will cause great economies in the cost of transportation of freight for a large portion of the Middle, Northwestern, Western, Southwestern and Southern states.

"The great importance of this canal in case of foreign war is commanding increased attention, as vessels used in defending Washington and the Potomac, Baltimore and the Chesapeake, and Philadelphia and the Delaware, could be concentrated with great rapidity for the protection of any one of these most important cities and regions. The prevention of the burning and destruction of either the National Capital, or Baltimore, or Philadelphia, by such rapid concentration of naval forces, would make the cost of this canal comparatively insignificant. As it is the policy of the United States to maintain only a small and inexpensive navy, such a permanent and effective system of protection must continue to secure additional and earnest approval and support. As during the past year, with reduced crops, 26,000,000 bushels of grain were exported from Baltimore, and when there are full crops much larger quantities, and as on account of its geographical advantages the exports not only of cereals, but of cotton, cattle, tobacco, provisions and other commodities, as well as the imports of supplies, must continue to be enlarged, the saving to consumers and producers would form an economic basis of calculation in connection with national interests that cannot fail to secure the requisite support in Congress to obtain at no distant day the construction of this great highway.

DEEPENING OF THE CHANNEL TO THE PORT OF BALTIMORE.

"The work of deepening the channel to the port of Baltimore to 27 ft. at mean low water has progressed with great rapidity. There is now a channel 27 ft. deep, which is in use, and which is greatly promoting and facilitating the commerce of Baltimore. It is important and necessary, however, for safe and reliable navigation for the very heavy ships now engaged in the commerce of this port that the channel shall be made not less than 400 ft. wide. It is anticipated, in view of the great interest so large a portion of the United States has in facilitating commerce through Baltimore and in promoting the economies of exporting and importing goods through this port, that early in the next session of Congress the requisite appropriation will be made to give this additional and effective advantage. In view of the great interests involved in perfecting this channel, it is most reasonable and proper that an additional appropriation should be made, especially when it is remembered that in 1872 and 1873 the city of Baltimore appropriated \$400,000 for this national improvement, and that this sum was expended by her taxpayers in assisting to effect the desired object. With an appropriation of \$450,000 by the next Congress, it is understood that this important work could be rapidly completed.

NEW GRAIN ELEVATOR AT CAMDEN STATION.

"During the year a substantial and commodious brick elevator, 70 ft. wide, 160 ft. long and 120 ft. high, has been erected at Camden Station for the storage of oats, rye, corn, barley, etc., for the local trade of the city. The building contains: 78 bins of one car-load capacity, 22 bins of three car-loads capacity, 11 bins of four car-loads capacity, and 7 bins of six car-loads capacity, making a total of 118 bins, with a capacity of 258,000 bushels.

"This elevator supplies an economical accommodation which has been much needed by the grain trade of the city, there having been no suitable storage facilities for such grain. Thus an accumulation of stock has been prevented, and consequently prices have been very irregular.

"The irregularity in prices has prevented the handling of oats for export, and hence Baltimore has been largely excluded from this export trade.

"It is confidently expected that the erection of this elevator will not only greatly facilitate and increase the trade of the city for local consumption, but will be the means of attracting to Baltimore an extensive trade in oats for foreign export through the Locust Point elevators. The immense capacity of these elevators, 4,000,000 bushels, can be used for the extension of this trade, as well as for corn and wheat. It will be the policy of the company to encourage in every practicable form both the home and export trade in this commodity.

CONCLUSION.

"The board express with pleasure their continued appreciation of the successful management of the business of the company through the faithfulness and efficiency of the officers and employees in all departments of the service."